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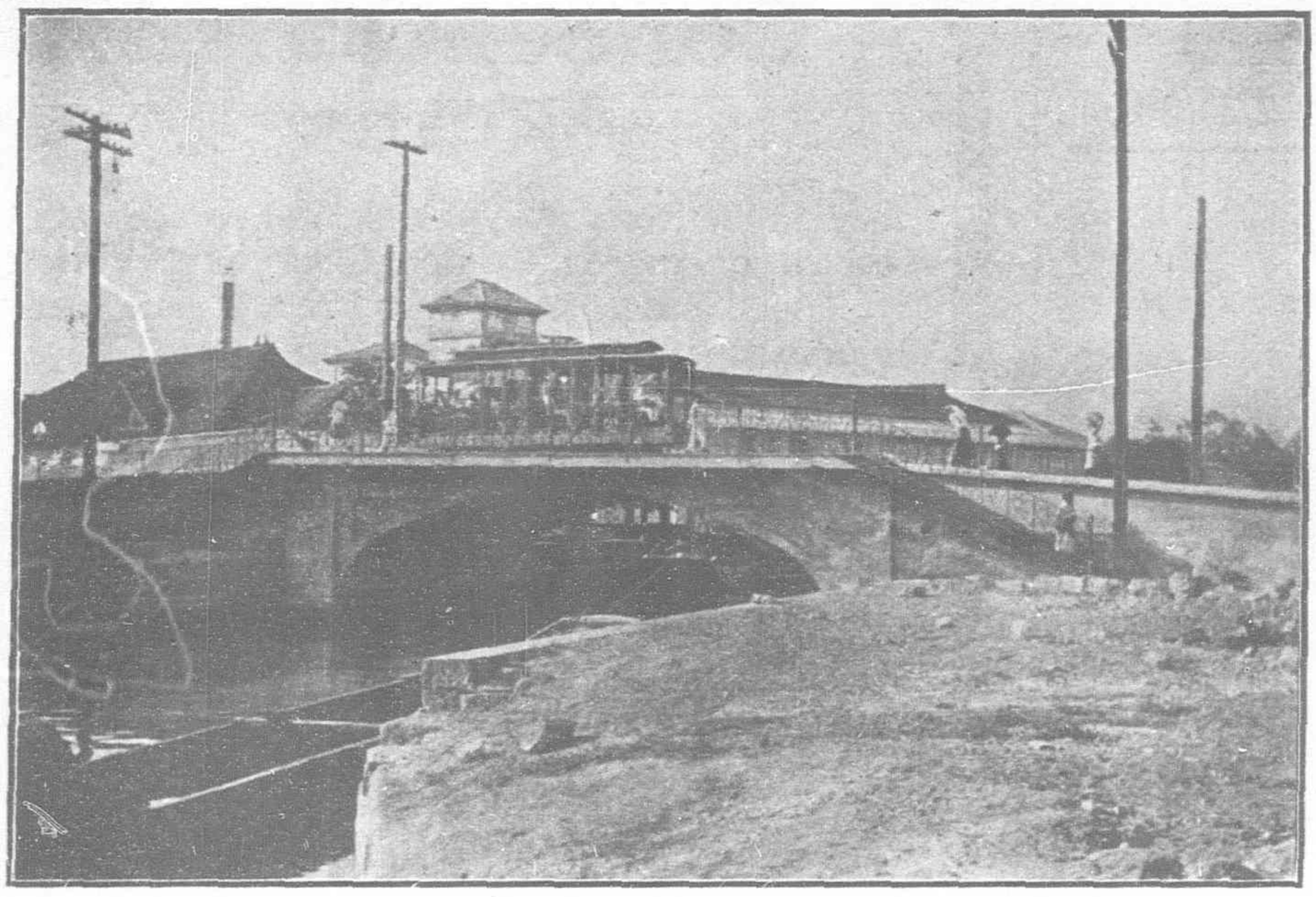
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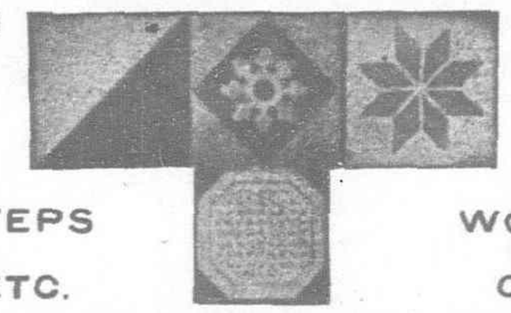
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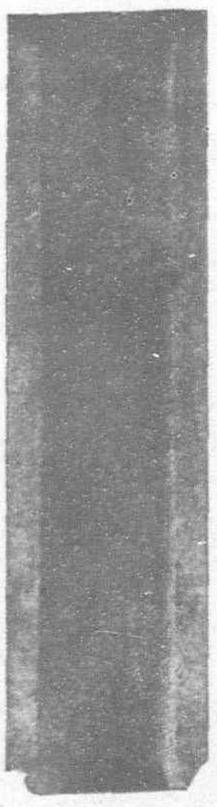


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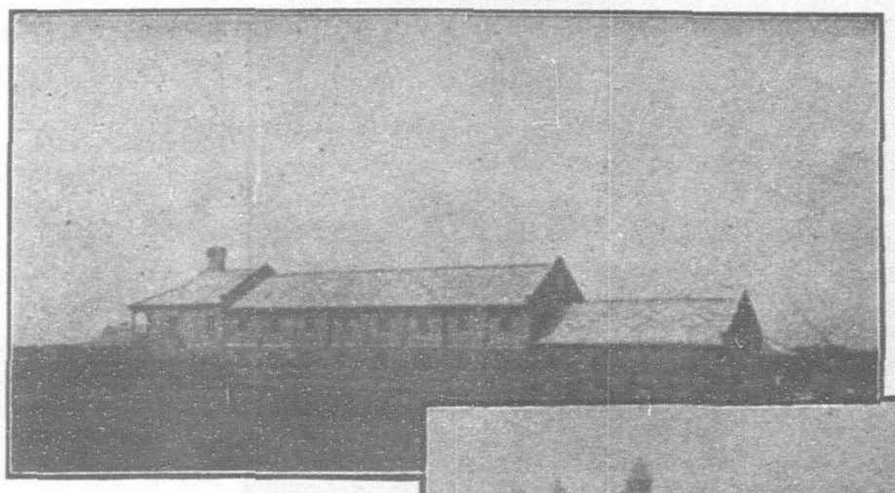


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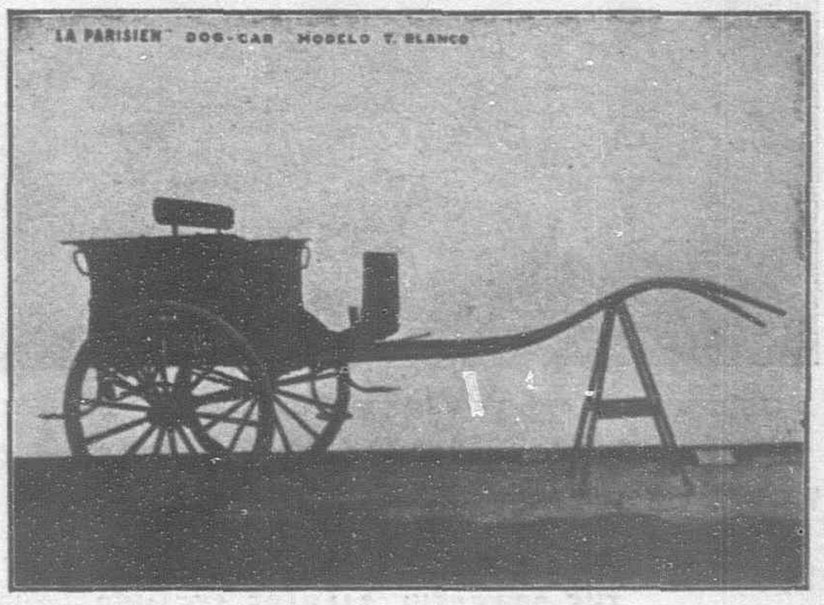
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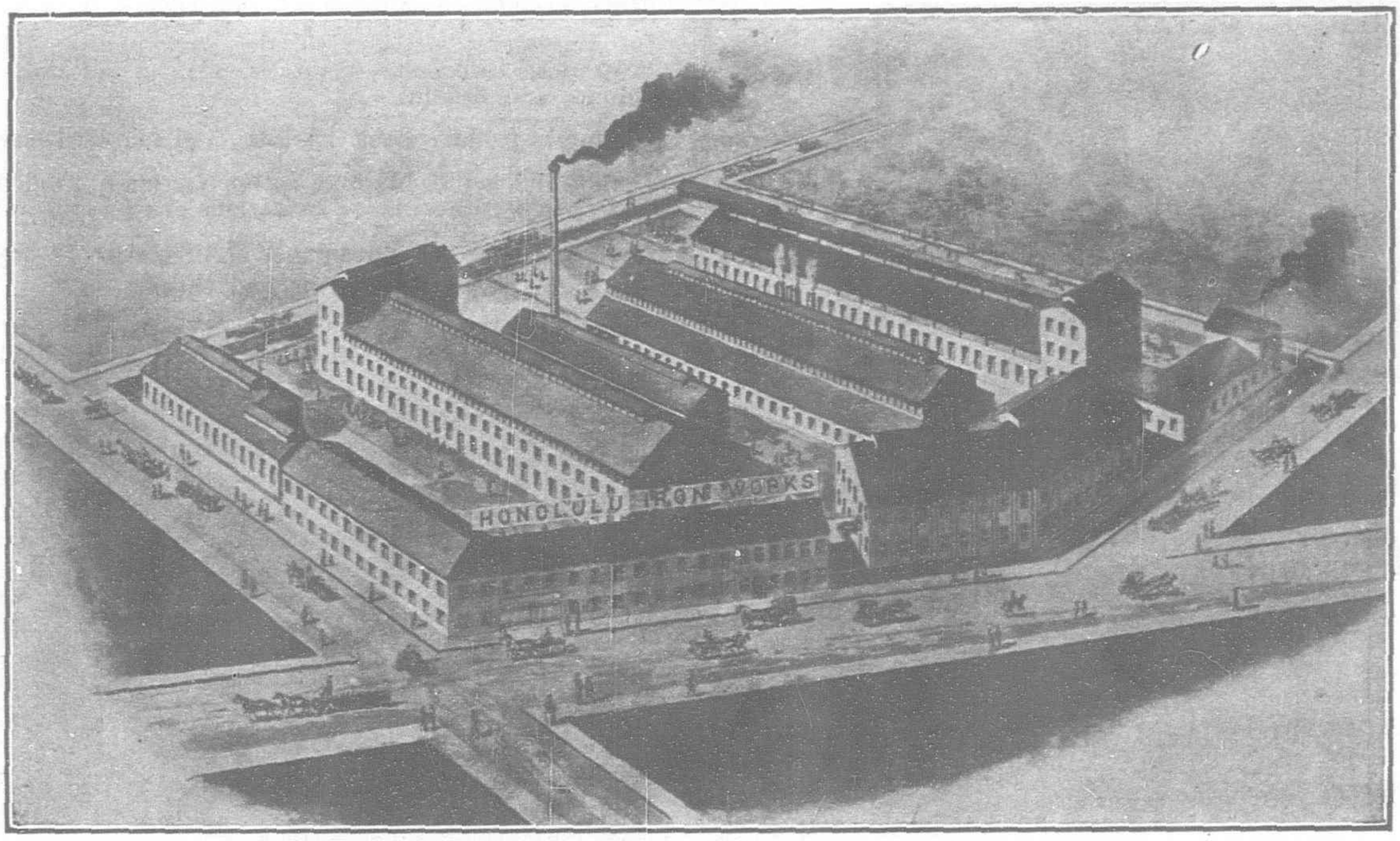
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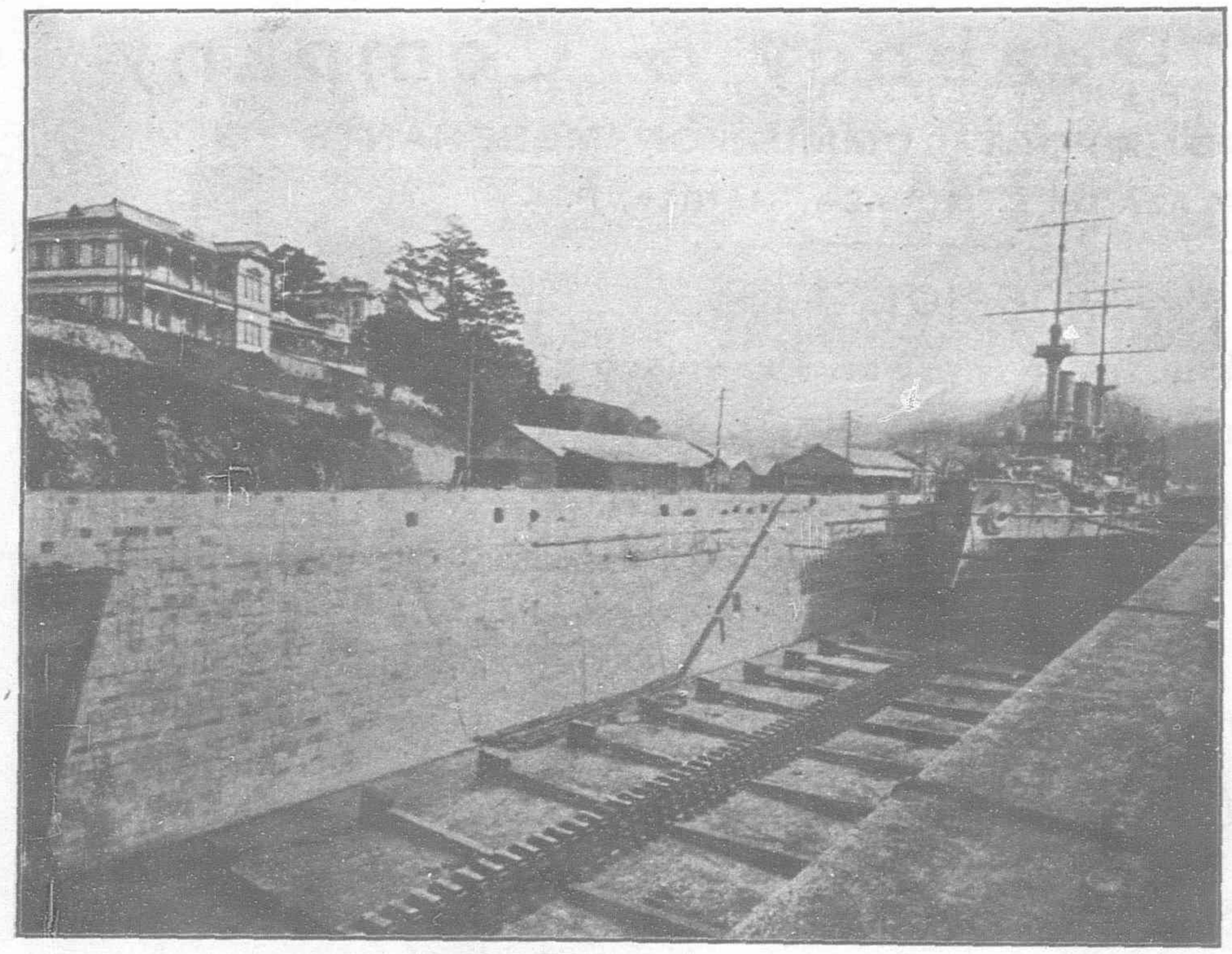


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LENGTH ON BLOCKS	360	,,
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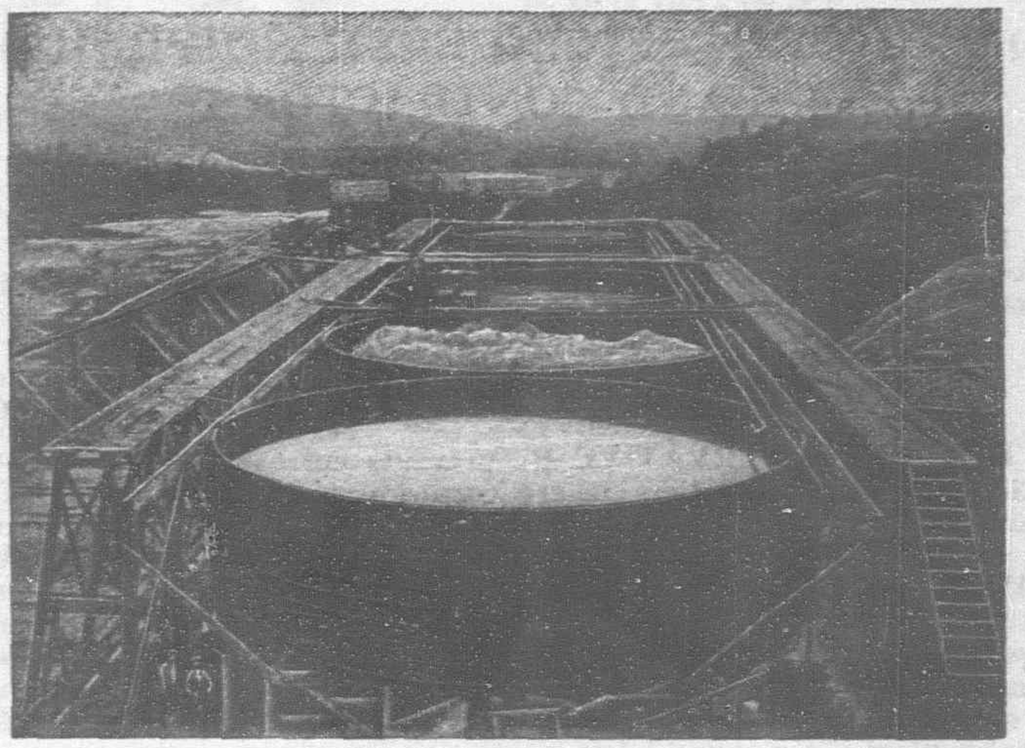
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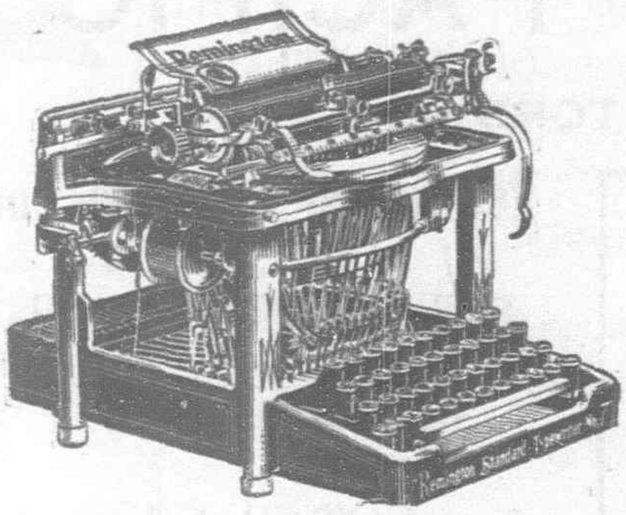
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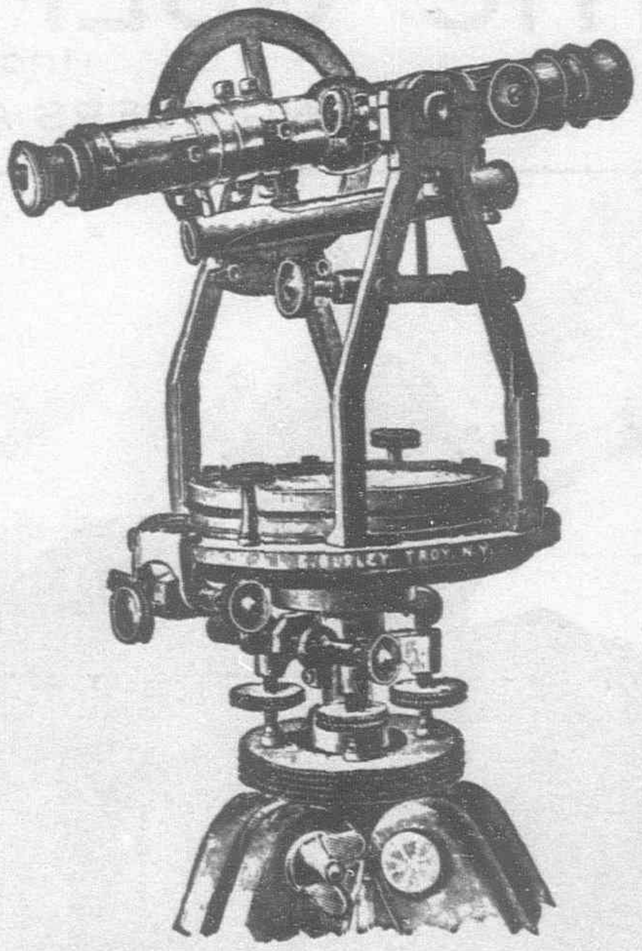
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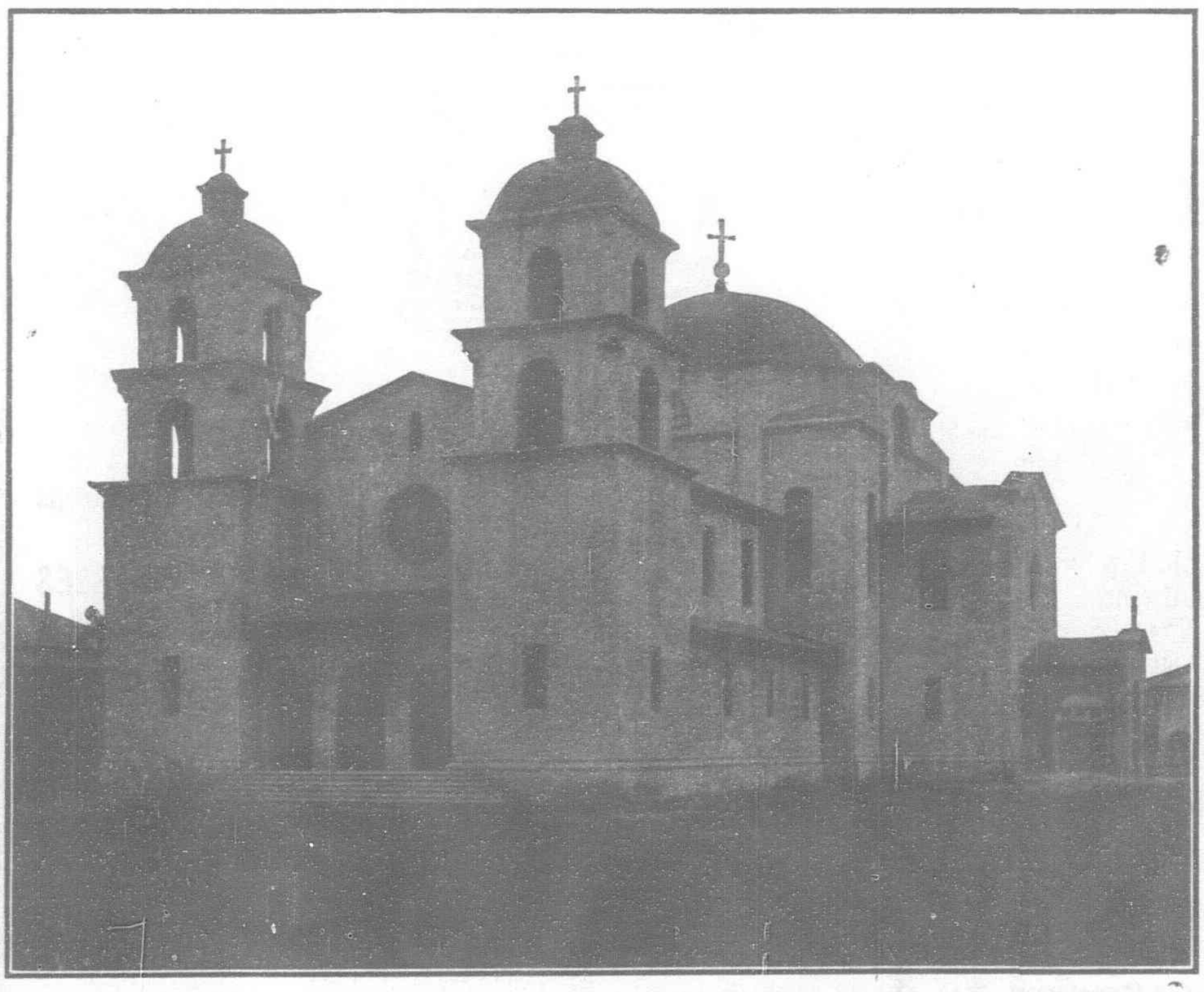
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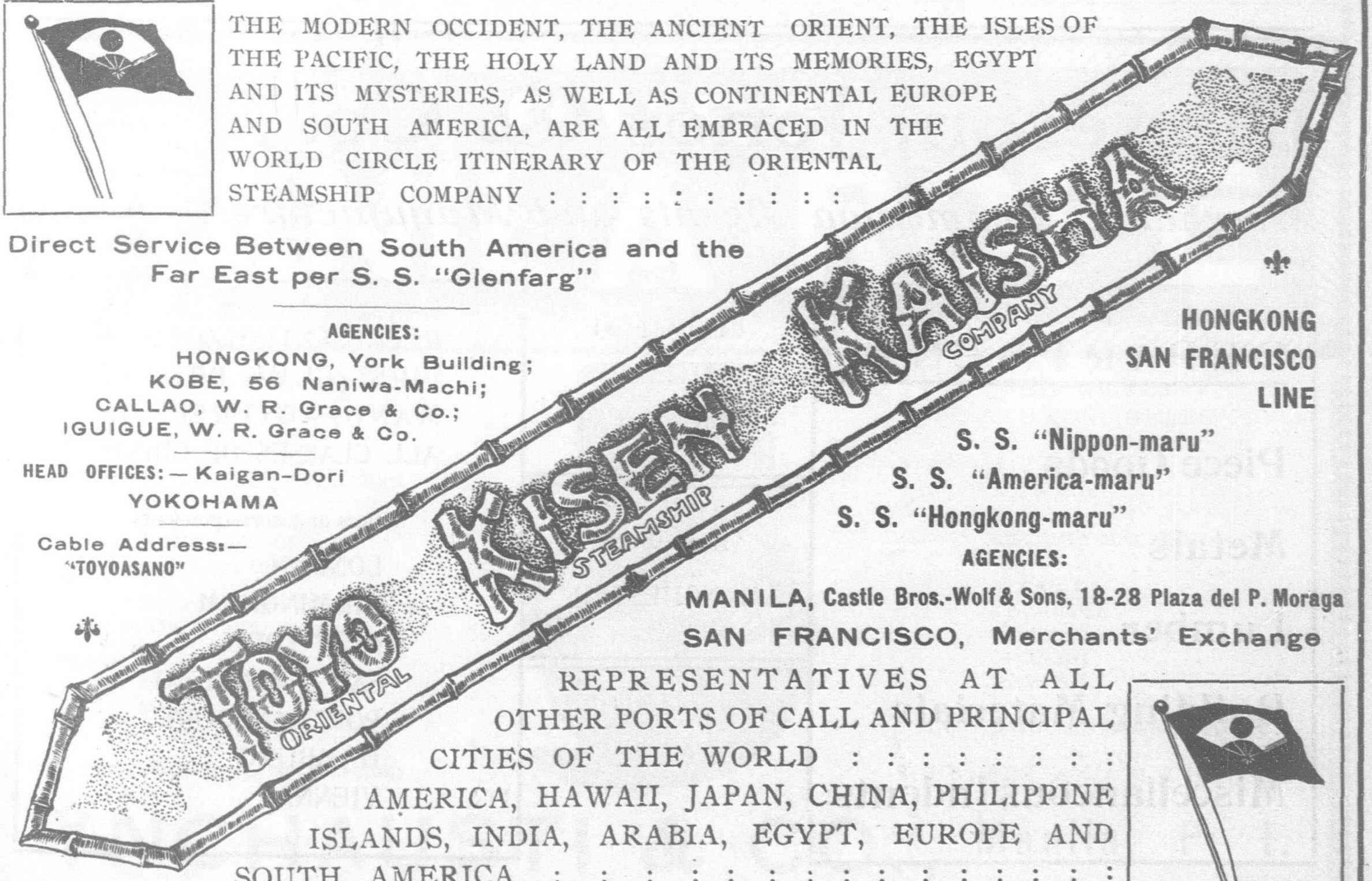
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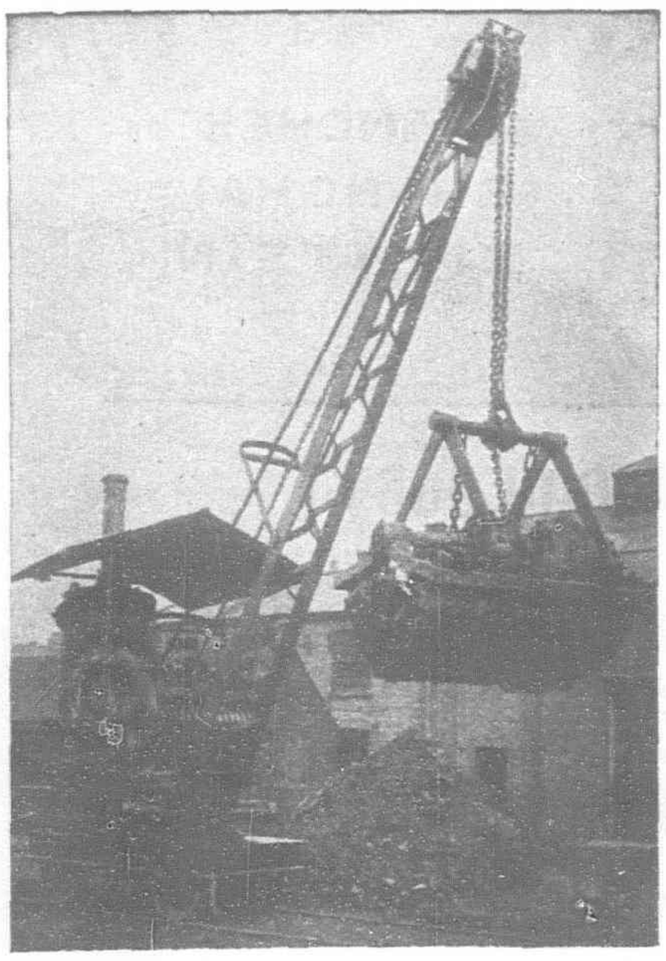


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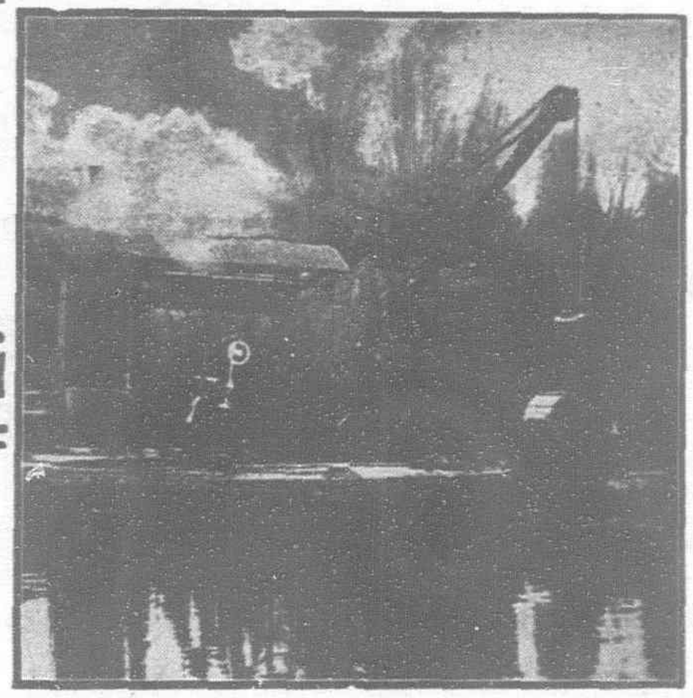
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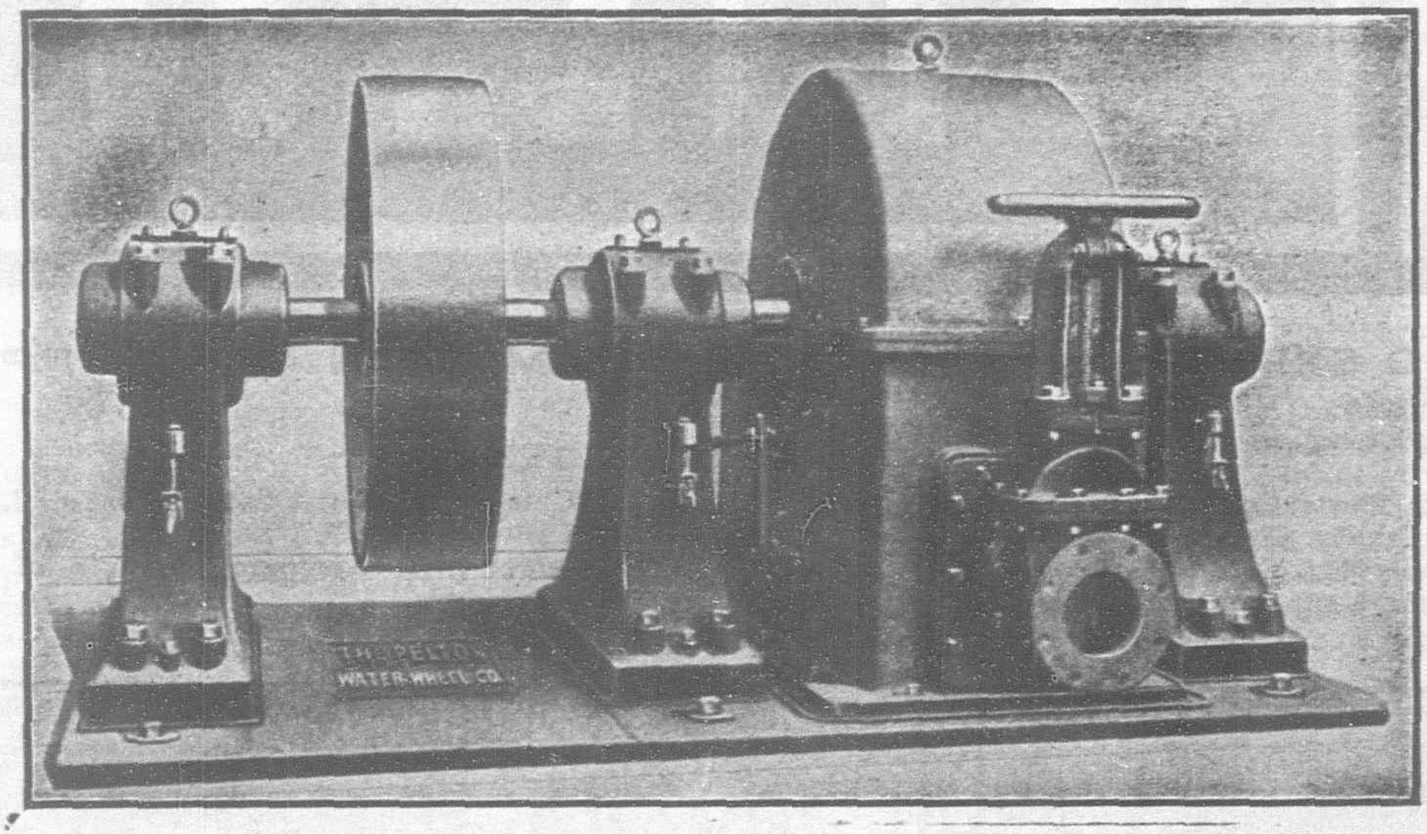
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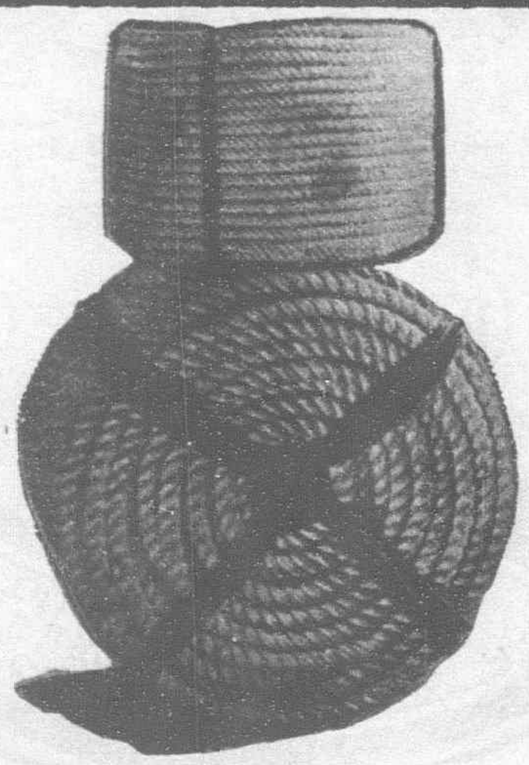
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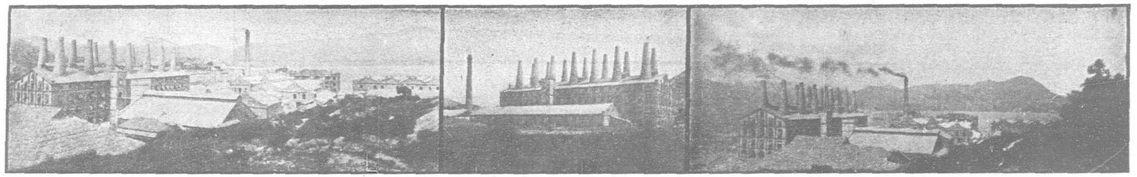
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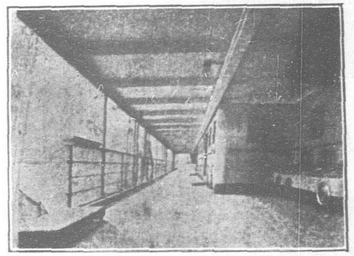
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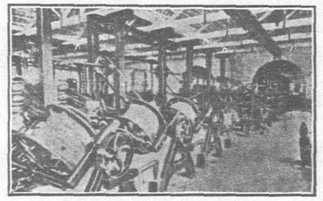
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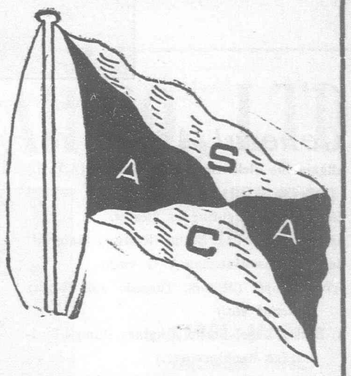
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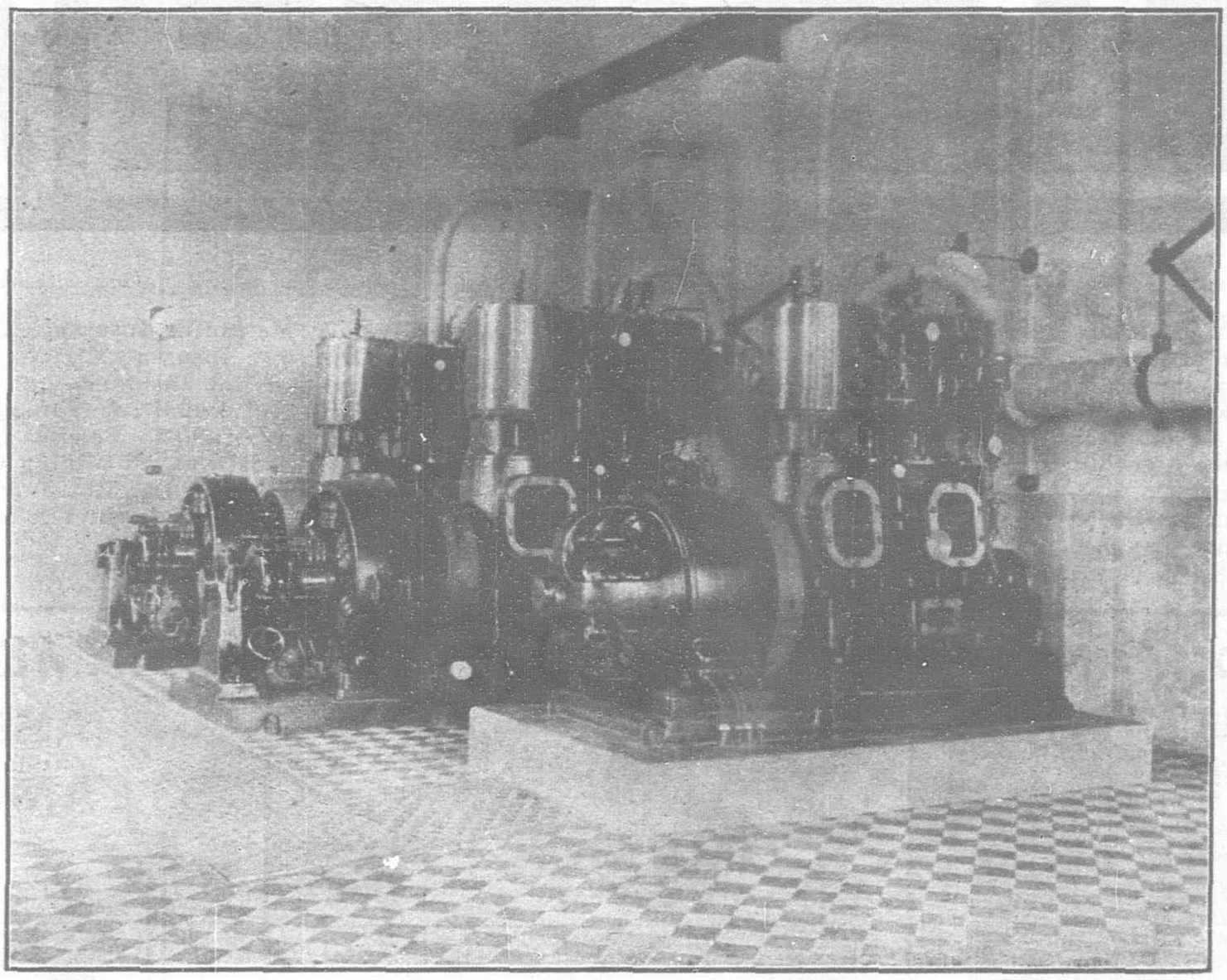
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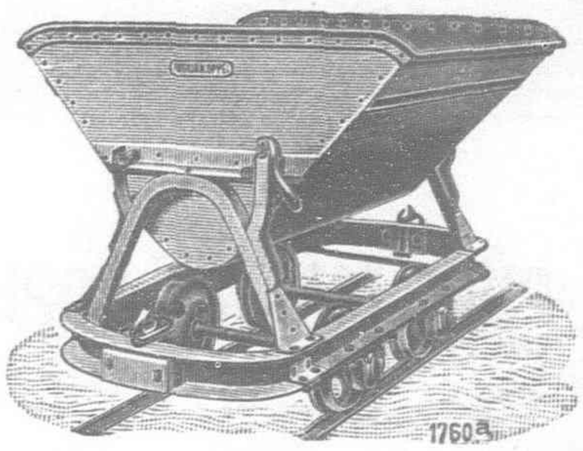
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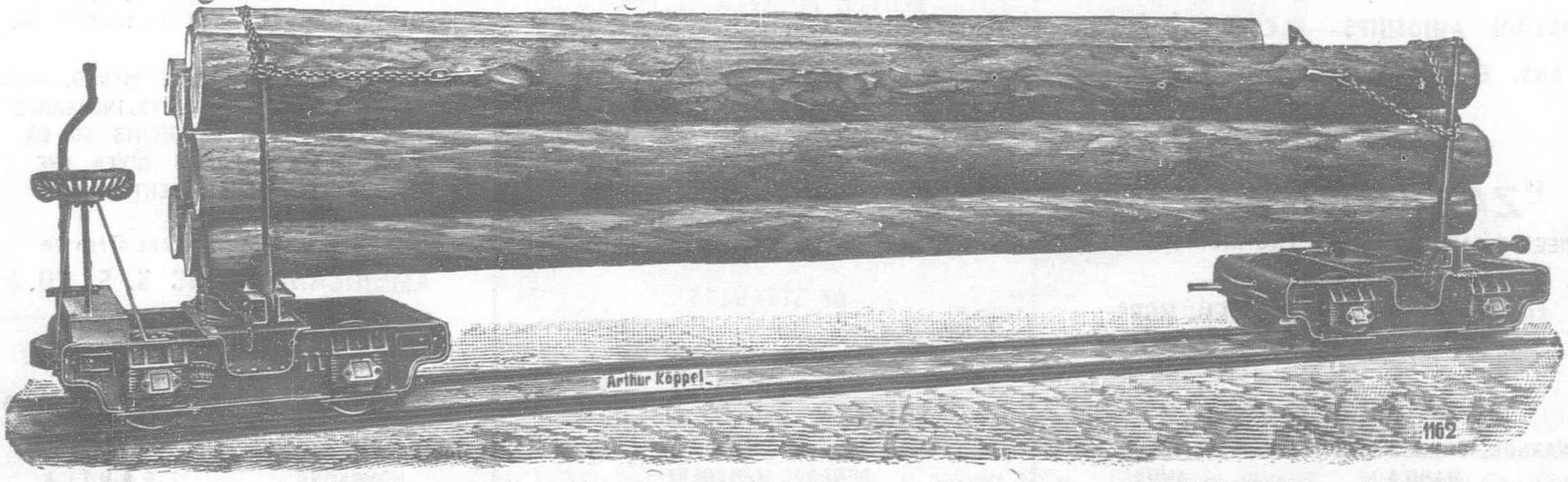
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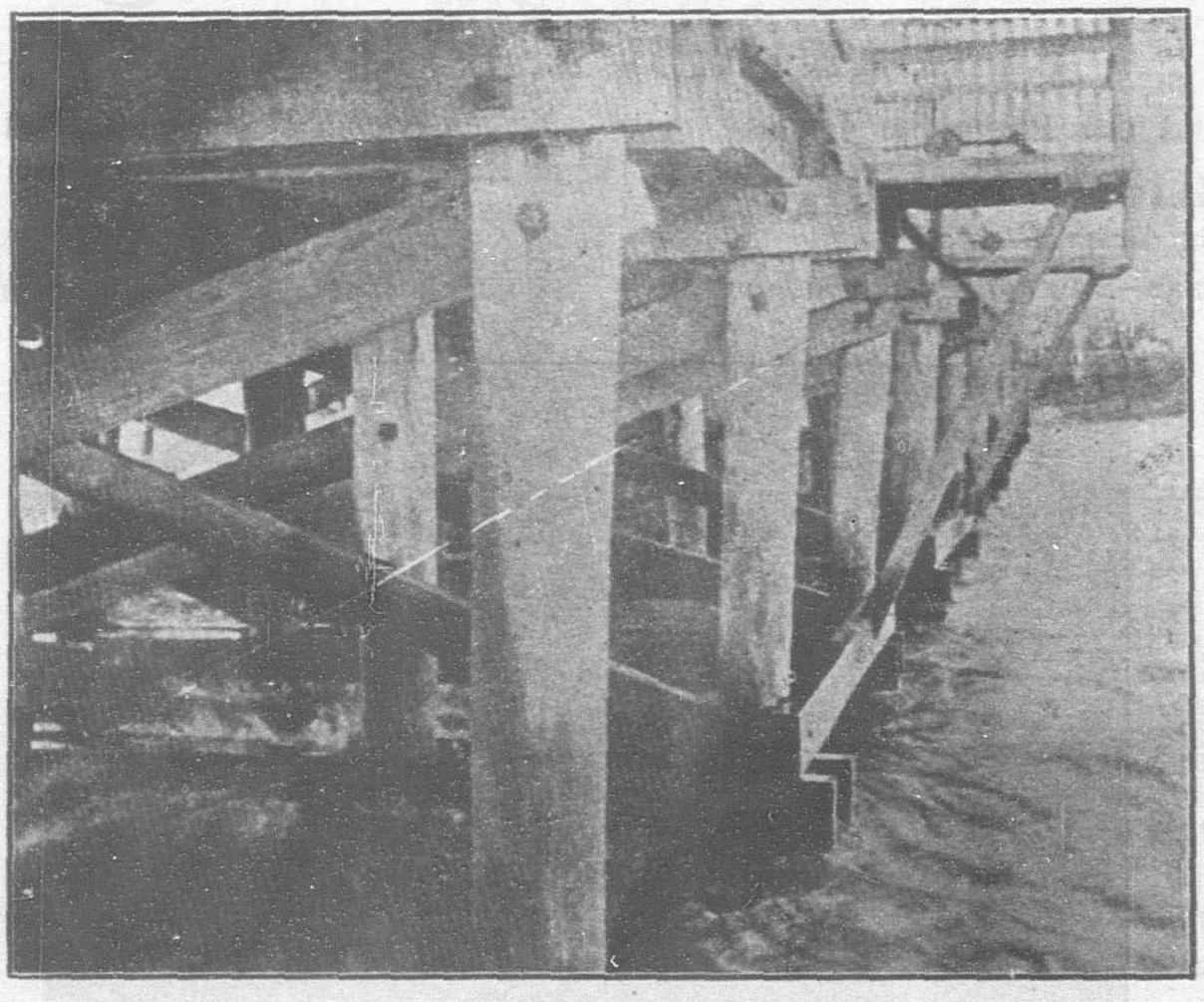
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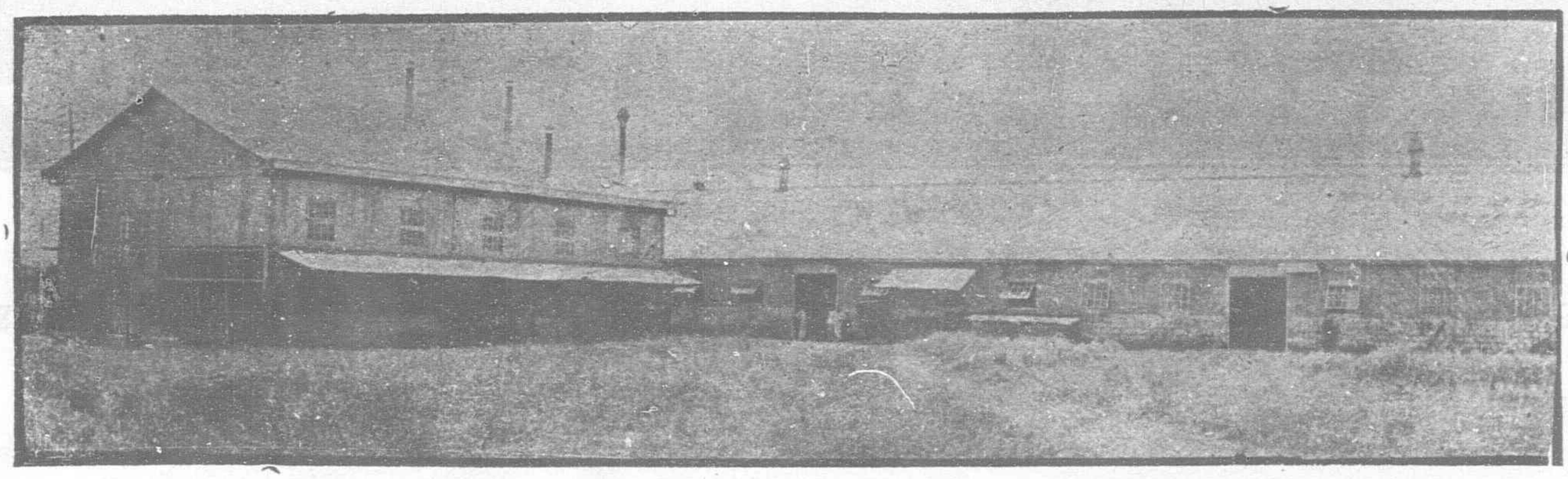
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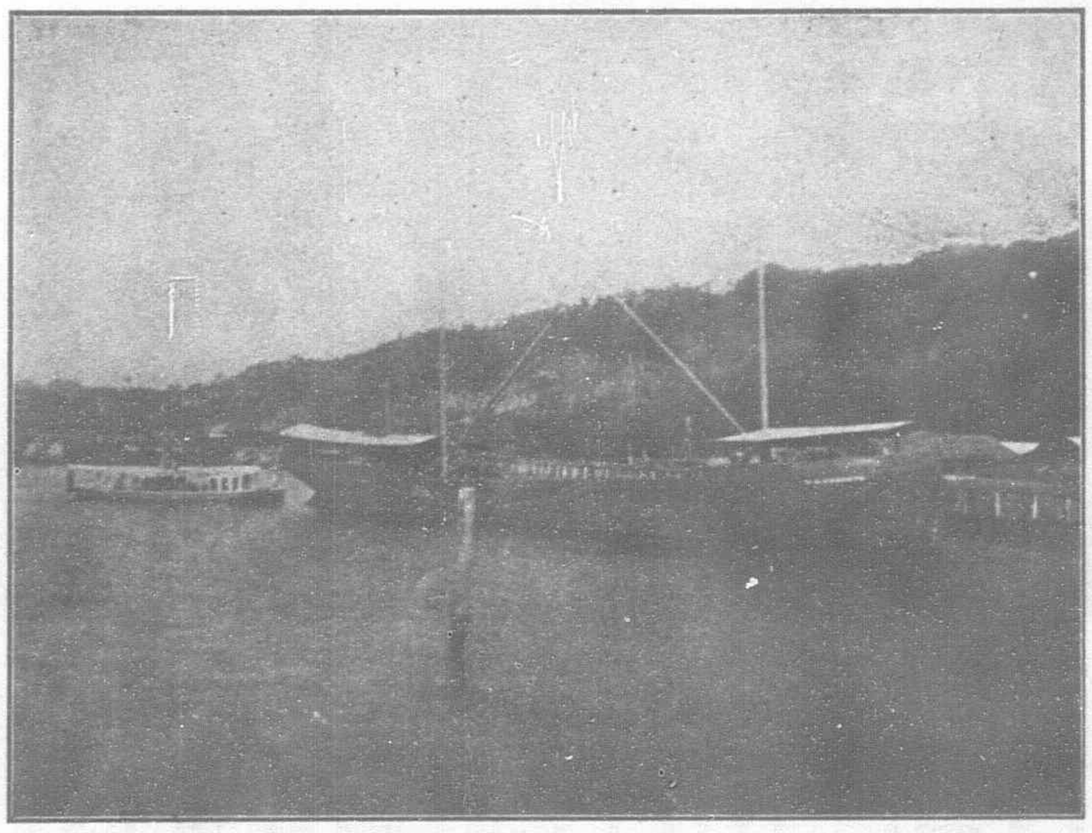
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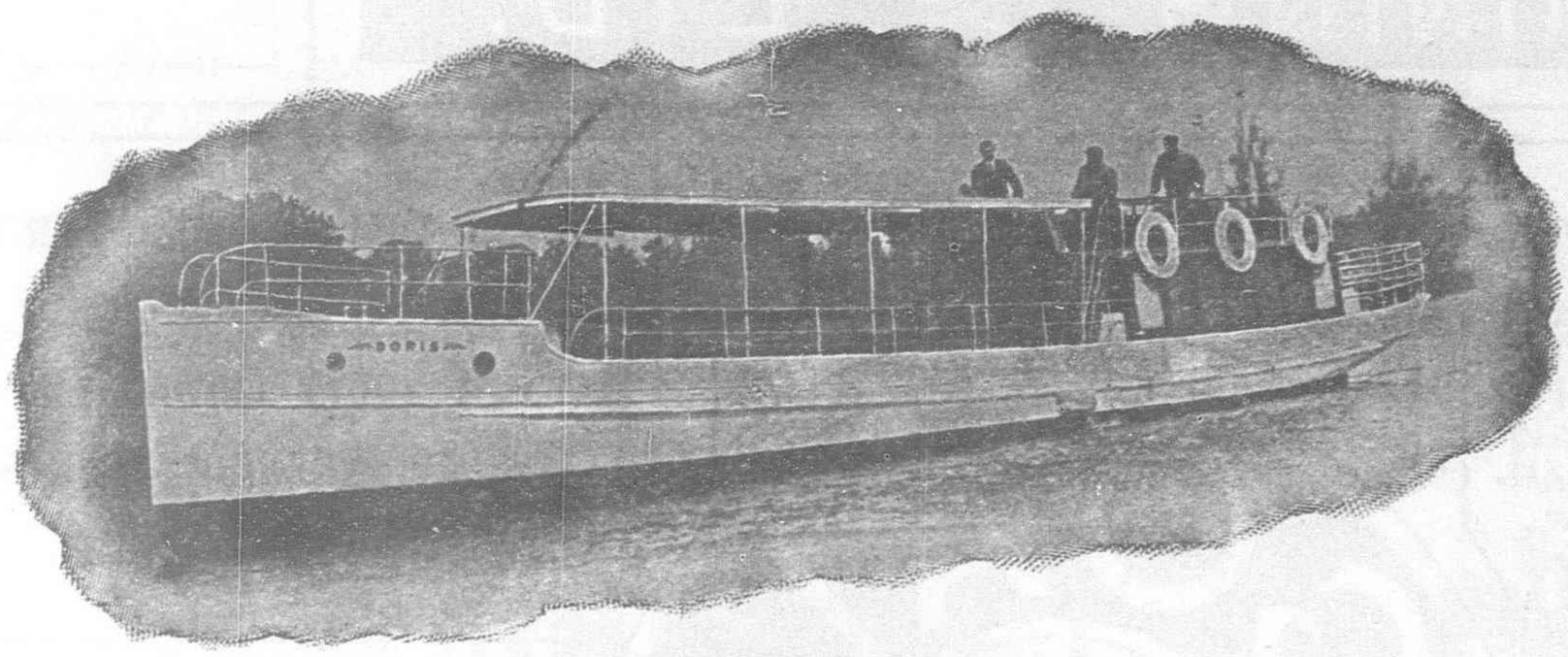
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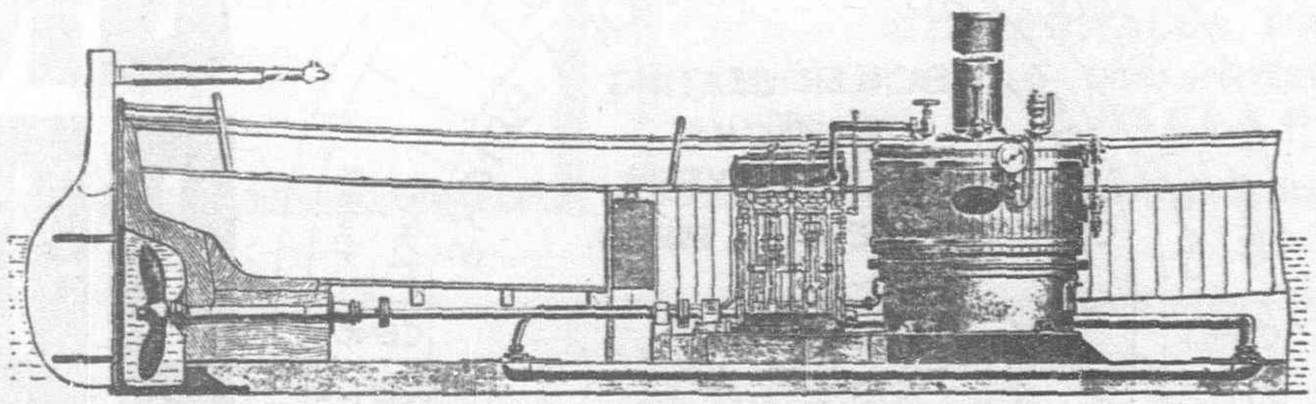
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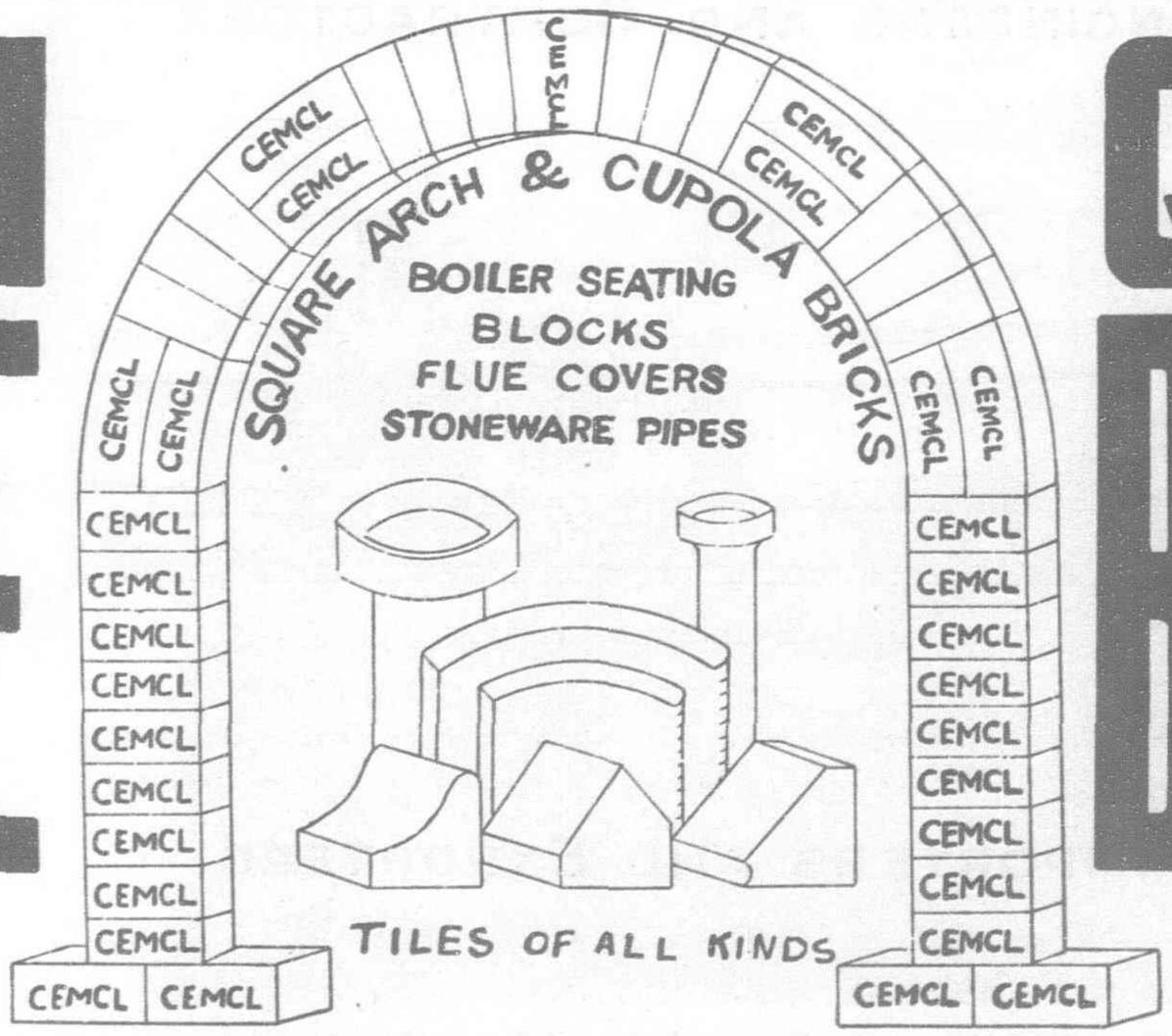
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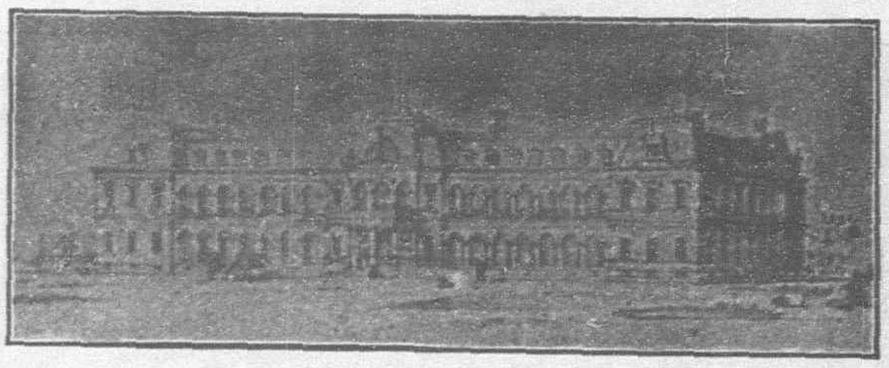
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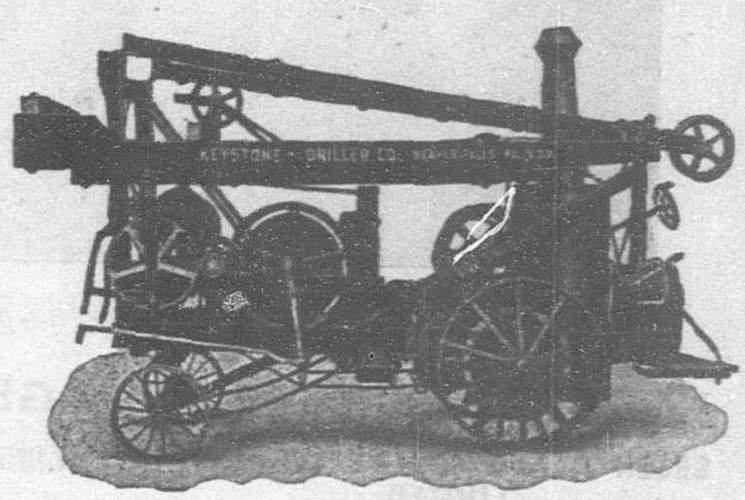
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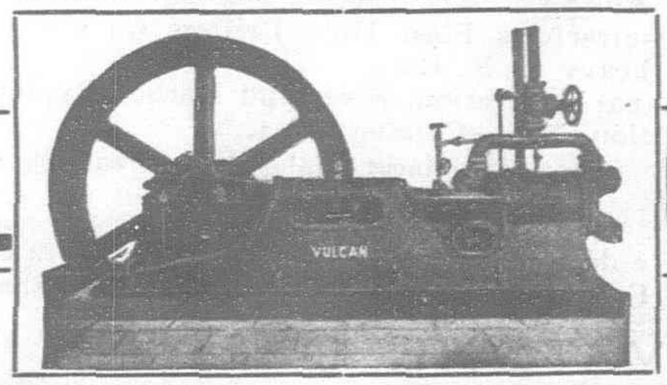
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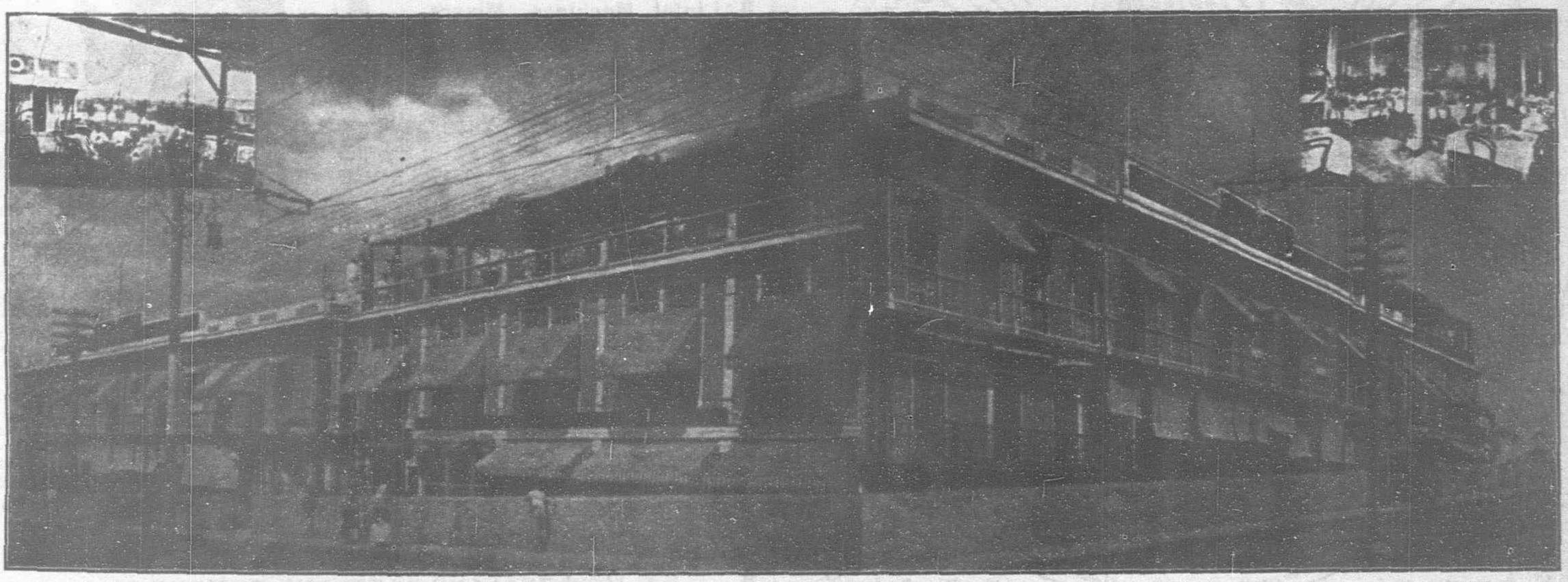
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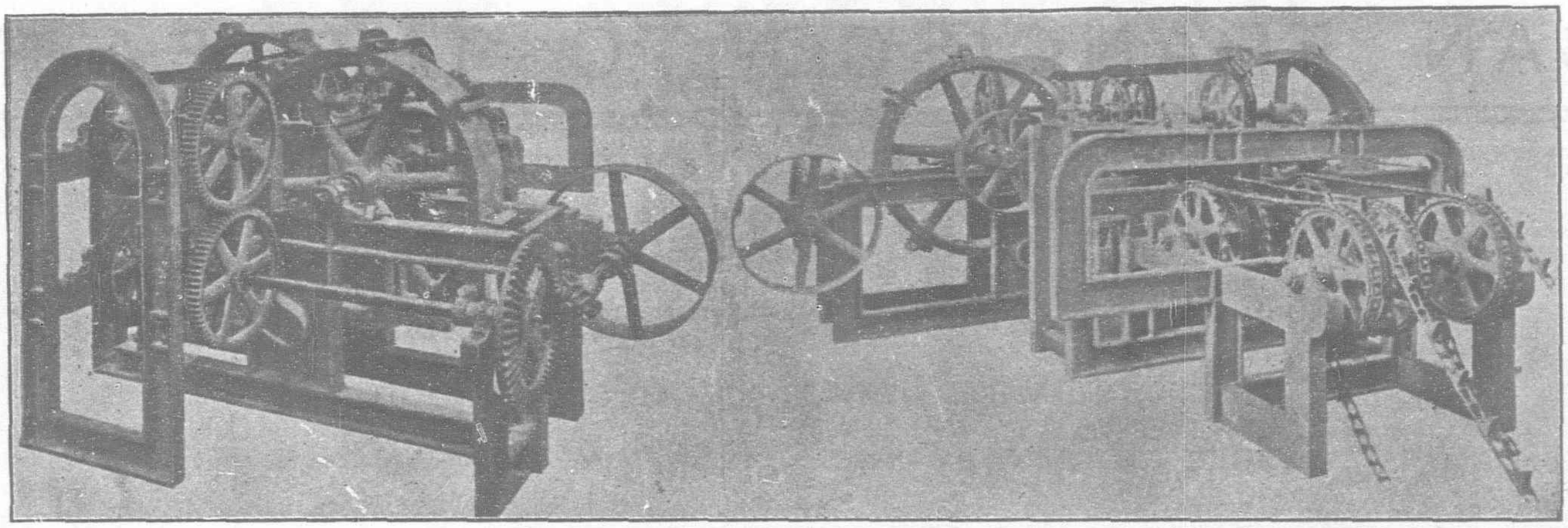
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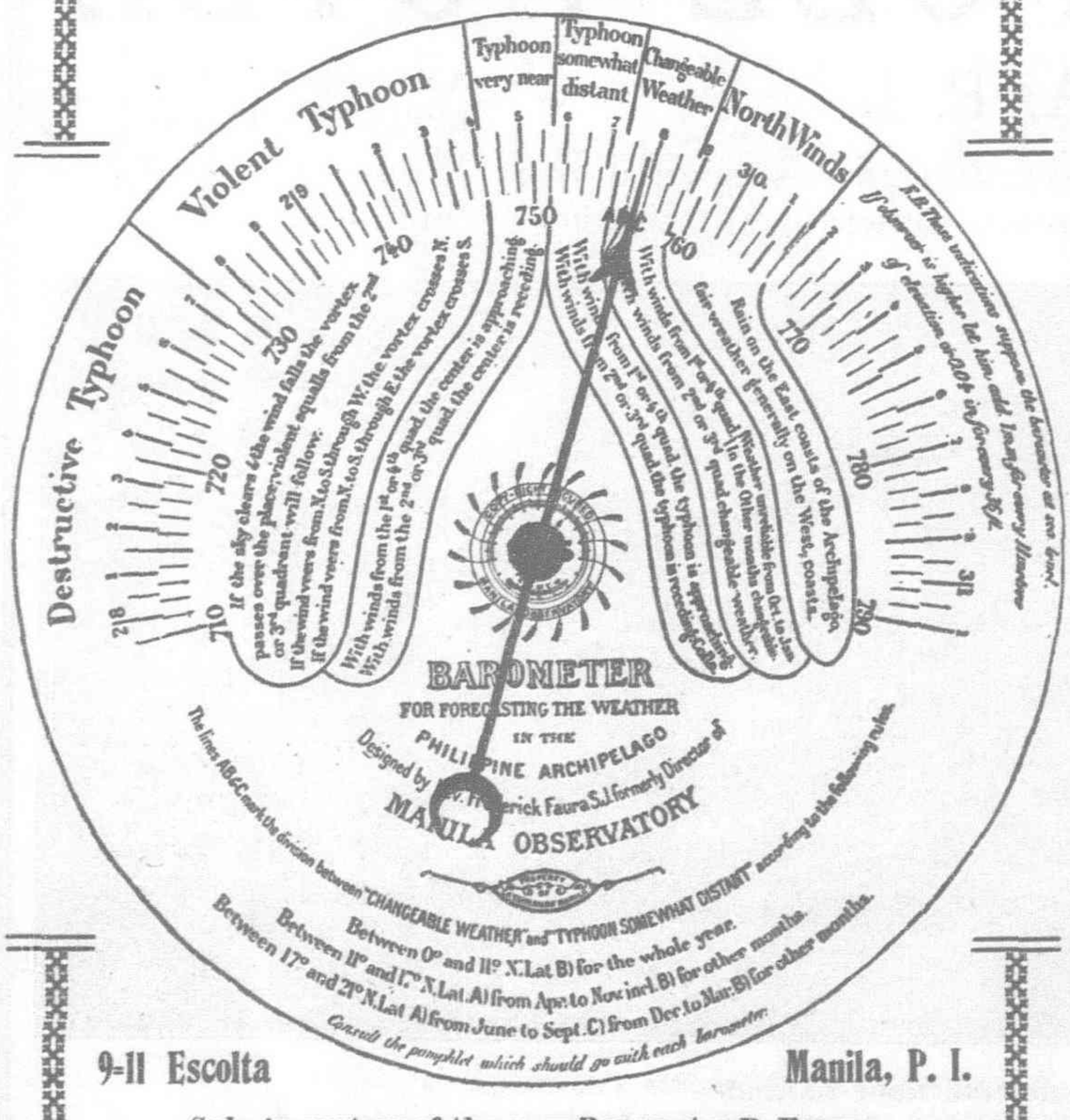
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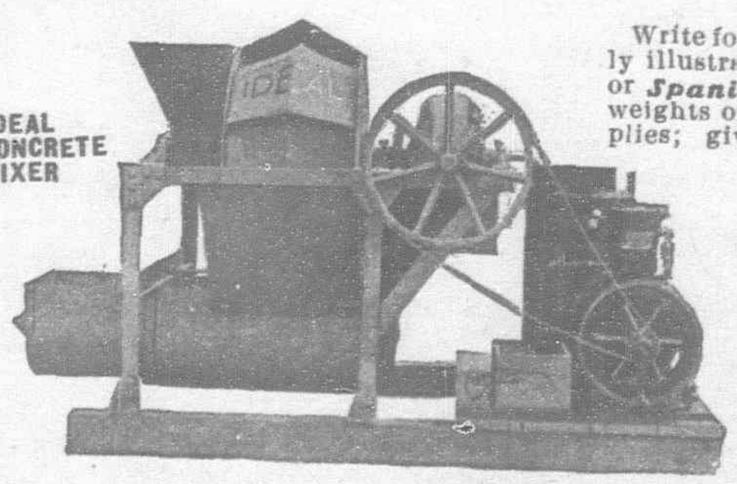
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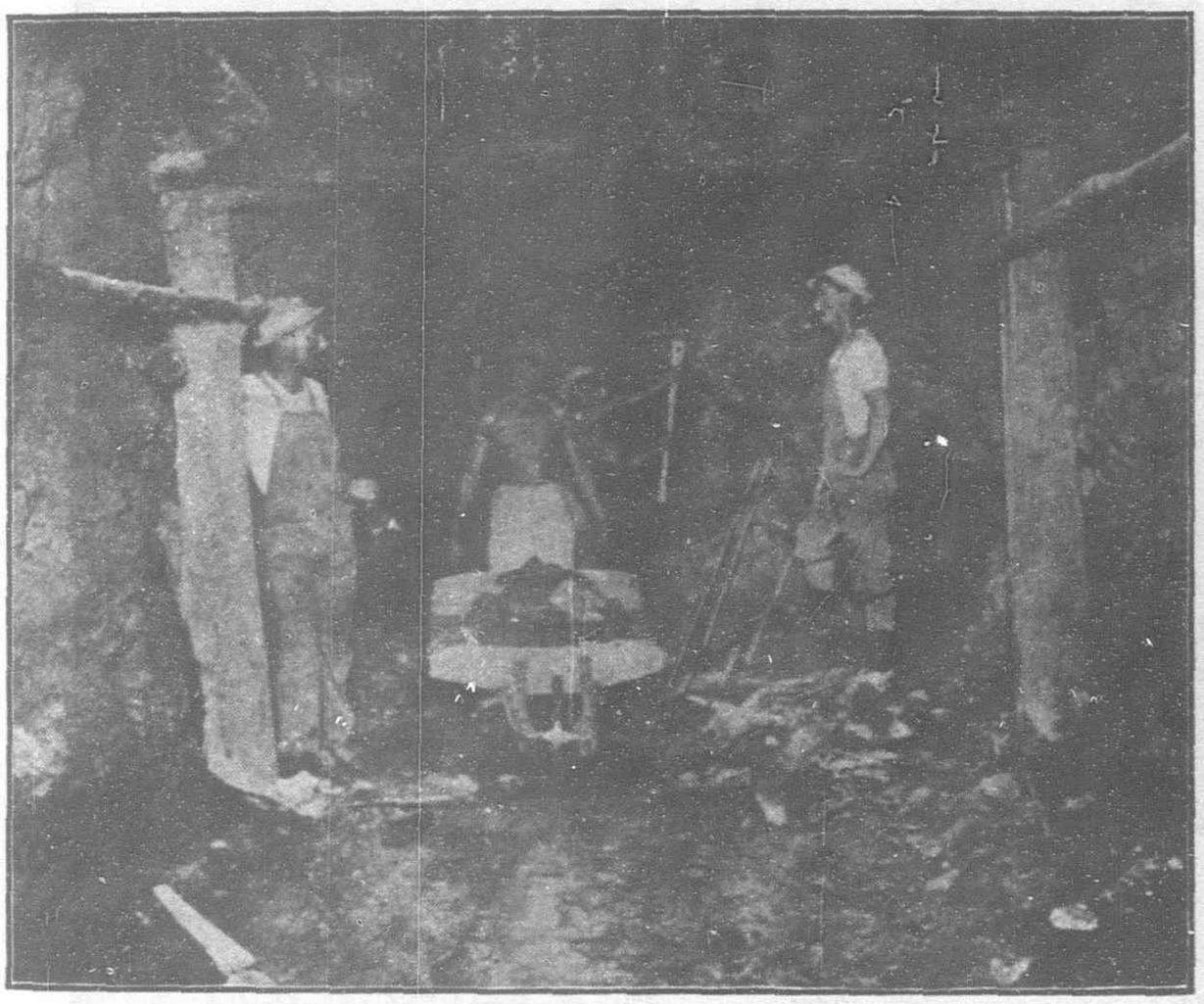
Organized 1901
Incorporated 1903
CAPITAL - $3,000,000.00

Cable: "GUINOBATAN," Manila
Code: Western Union

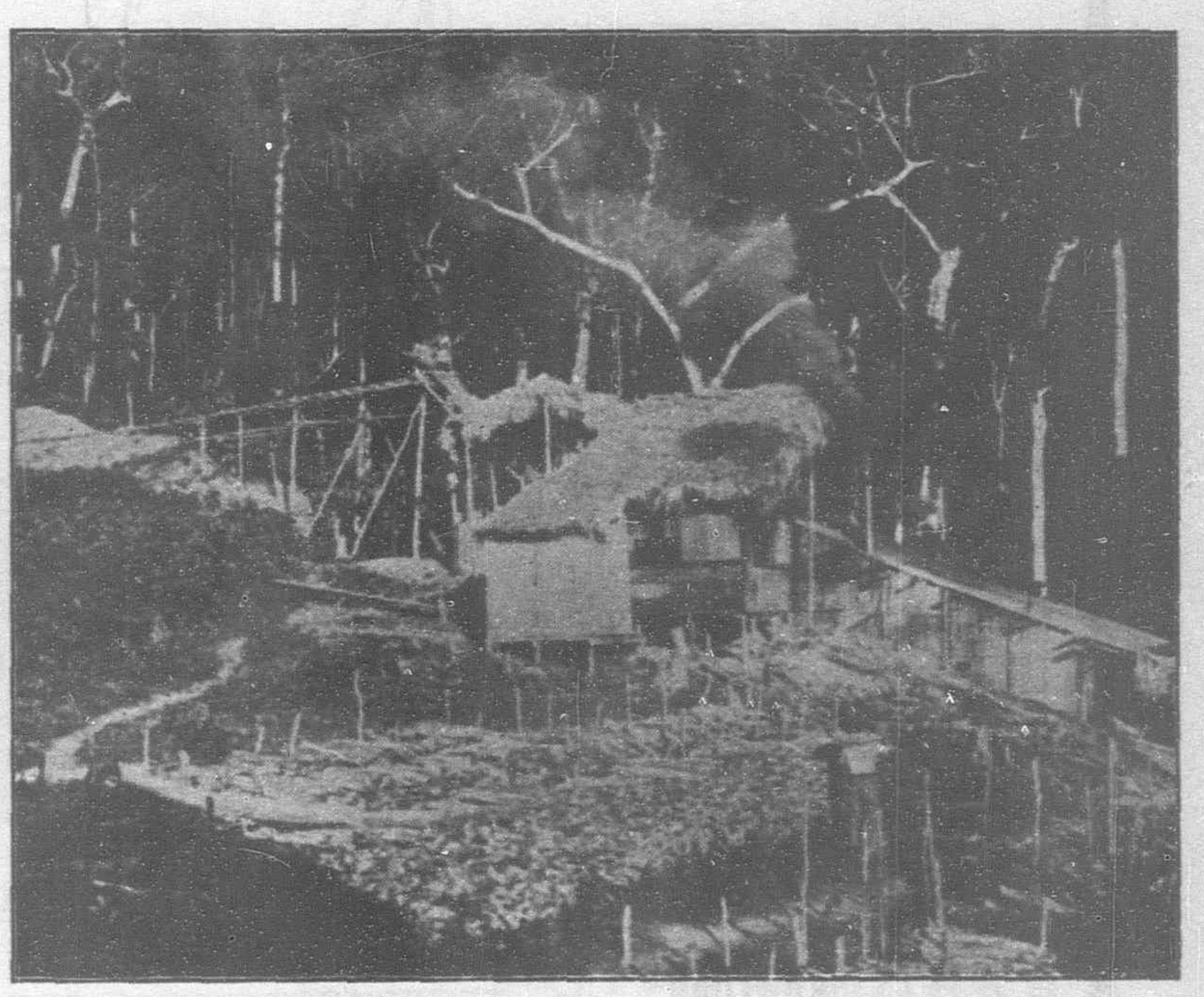
Eastern Mining Co.

INCORPORATED
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MANILA
P. I.

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Tel., 6842 & 6843 Broad



INTERIOR OF "HAVE GOT" TUNNEL



VIEW OF MILL FROM VERANDA OF OFFICE BUILDING

The property of the Eastern Mining Company is the best developed of those in the Aroroy District on the Island of Masbate, P. I.

From inspection trips of government officials, from preliminary investigations of the Mining Bureau of the Philippines, and from reports of Mining Engineers, it is conceded that the property is one that will, to the fullest degree, justify further development of the mine, and the installation of a suitable plant to treat the ore. There is ore enough "blocked out," in the full engineering significance of the term, to warrant the installation of a plant. From ore tests made by responsible engineers, it is found that there are no undue difficulties in the way of rapid and cheap treatment.

Conditions of mining on the property are excellent. The mines are opened by tunnels and are self-draining. There is ample height above the mine levels for the working of the ore bodies economically and by best methods.

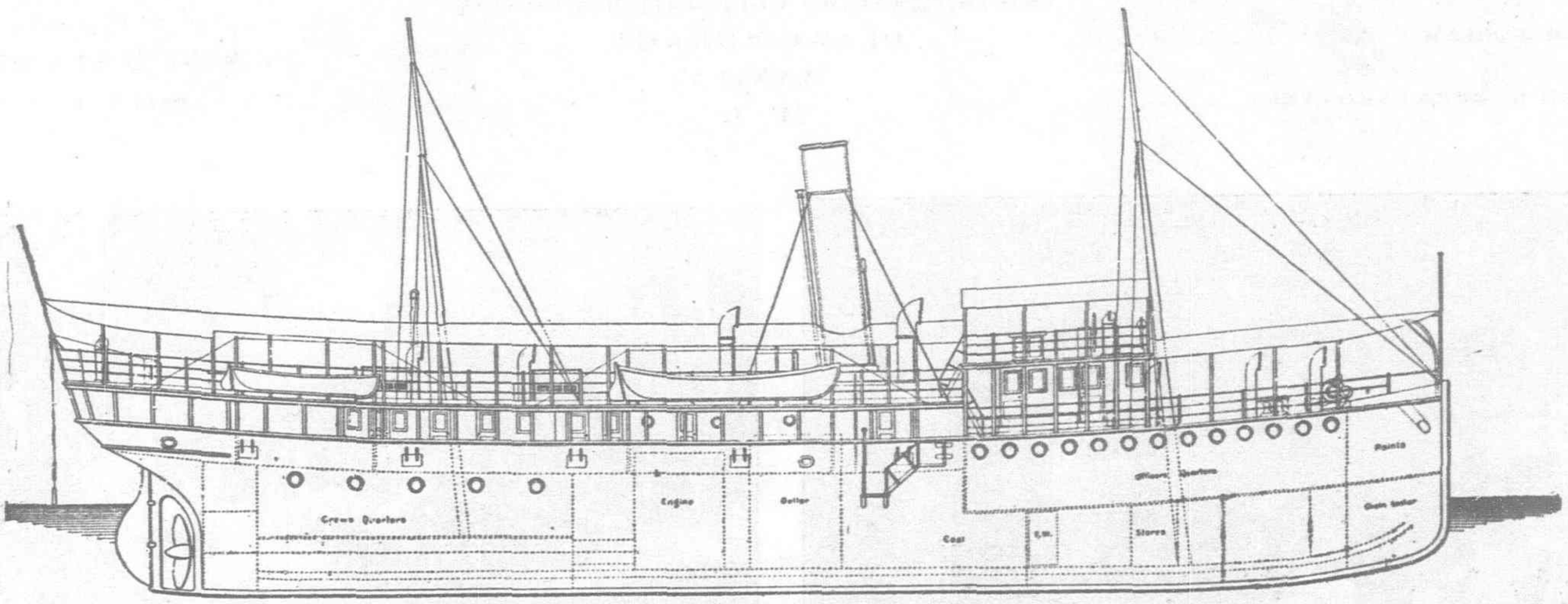
By careful and extensive sampling the values of the ore bodies are assured, and the mine shows ore that can be handled at a handsome profit. The results of the experimental plant show conclusively that estimates and figures are correct and that now the Company is assured of success, by the proper exploitation of the property.

What is needed now is a large milling plant with its increased mine development and for this purpose—for the expansion of the present well proven concern into a large producer,—**a limited amount of treasury stock is offered investors at a low figure, for providing the necessary capital to purchase and install a new 40-stamp mill. For particulars and information apply to either Manila or New York Office.**

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ENGINEERS, BOILERMAKERS, FOUNDERS, SHIP BUILDERS AND DOCK OWNERS

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THE COMPANY'S DOCKS at KOWLOON, TAI-KOK-TSUI and ABERDEEN are in efficient working order, and the attention of Captains and Shipowners is respectfully solicited to the advantages which these Establishments offer for Docking and Repairing Vessels.

The Company has SIX GRANITE DOCKS and TWO PATENT SLIPS of the following dimensions:—

NAME OF DOCK OR SLIP	LENGTH ON KEEL BLOCKS	BREADTH AT ENTRANCE	DEPTH OVER SILL AT ORDINARY SPRING TIDES	RISE OF TIDE	
				SPRINGS	NEAPS
KOWLOON	*Feet.*	*Feet.*	*Feet.*	*Feet.*	*Feet.*
No. 1 Dock, Kowloon	576	86 feet top, 70 ft. bottom	30′	7′ 6″	3
No. 2 Dock, Kowloon	371	74′	18′ 6″	7′ 6″	—
No. 3 Dock, Kowloon	264	49′ 3″	14′	7′ 6″	—
Patent Slip, No. 1, Kowloon	240	60′	14′	7′ 6″	—
Patent Slip, No. 2, Kowloon	220	60′	12′	7′ 6″	—
TAI-KOK-TSUI					
Cosmopolitan Dock	466	85′ 6″	20′	7′ 6″	—
ABERDEEN					
Hope Dock	430	84′	23′	7′ 6″	—
Lamont Dock	333	64′	16′	7′ 6″	—

The DOCKS are fitted with every appliance in the way of Caissons, powerful Centrifugal Steam Pumps, etc., which enable them to be pumped out in three hours.

WORKSHOPS.—The extensive workshops on the premises at Kowloon, Cosmopolitan, and Aberdeen Docks possess every facility and appliance necessary for the repairs of ships and steam machinery. The Engineers' Shops are supplied with a large plant of the latest types of tools in the way of Lathes, Planing, Milling and Screwing Machines, Electric Cranes ,etc., etc., and capable of executing the largest class of work with despatch. The Shipwrights' Department has attached to it a Steam-Sawmill with Circular, Vertical and Band Saws, and also a complete plant of Wood-working Machinery of the most modern and improved type. The Blacksmiths' Shops are equally well furnished with a complete supply of powerful Steam Hammers, Cranes, etc., capable of forging stern posts and crank and straight shafting of the largest size.

Powerful Lifting Shears with steam purchase at two of their Establishments stand on a solid granite seawall, alongside which vessels can lie drawing 24 feet of water, and take in or out boilers, etc. The Shears at Kowloon are capable of lifting 70 tons.

The Company is prepared to tender for the construction of new vessels in either steel, iron or wood, having already built about 400 of varying sizes up to 3,000 tons; also to execute all kinds of ship work at lower rates and with greater despatch than any establishment in the East. Every department is under the close supervision of experienced European foremen.

SHIP-YARD is fully equipped with modern plant, including hydraulic flanging and bending machines, electrically driven rolls, punching, shearing, angle-bevelling, joggling and planing machines, capable of dealing with the heaviest class of work.

BOILER-MAKERS' DEPARTMENT.—The Company, in addition to executing repairs, is prepared to tender for new boilers to steamships for the construction of which it possesses special facilities, including powerful punching and shearing machines, hydraulic rivetters, etc.

FOUNDRY.—The Foundry is fitted with a large powerful Steam Crane and the Cupolas are capable of casting up to 100 tons. The Company is prepared to supply the very best iron and Brass Castings of all descriptions upon the shortest notice.

GALVANIZING PLANT of the most modern type by electrical deposit has been put up at the Kowloon Establishment, which is capable of doing the largest class of work.

STORES.—The Company's Godowns contain large and well-selected stocks of all material and fittings requisite in shipbuilding, engine-room outfits, furnishings, and ships' stores of all descriptions supplied at tariff rates.

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Cable Address:
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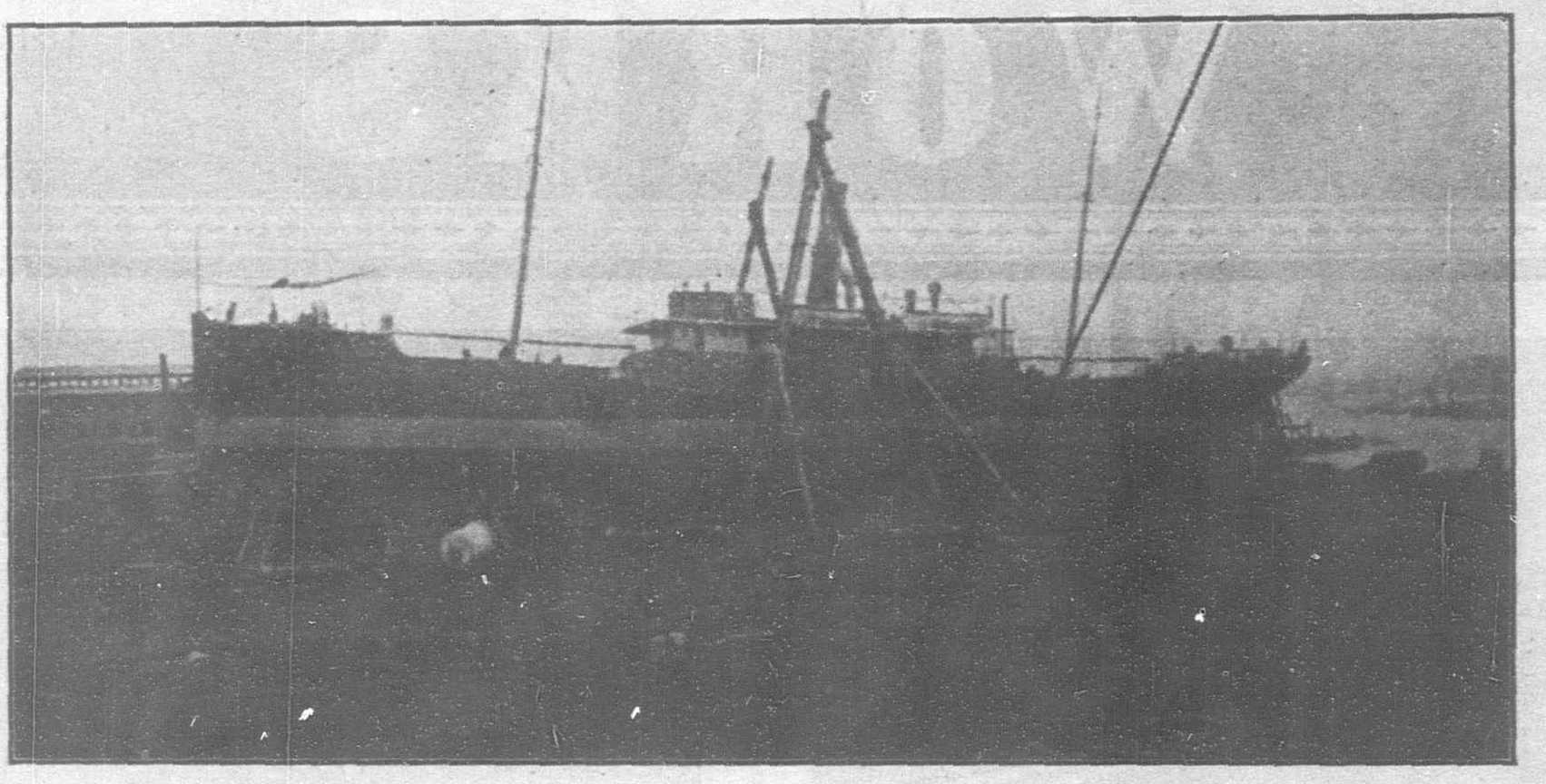
Codes Used:
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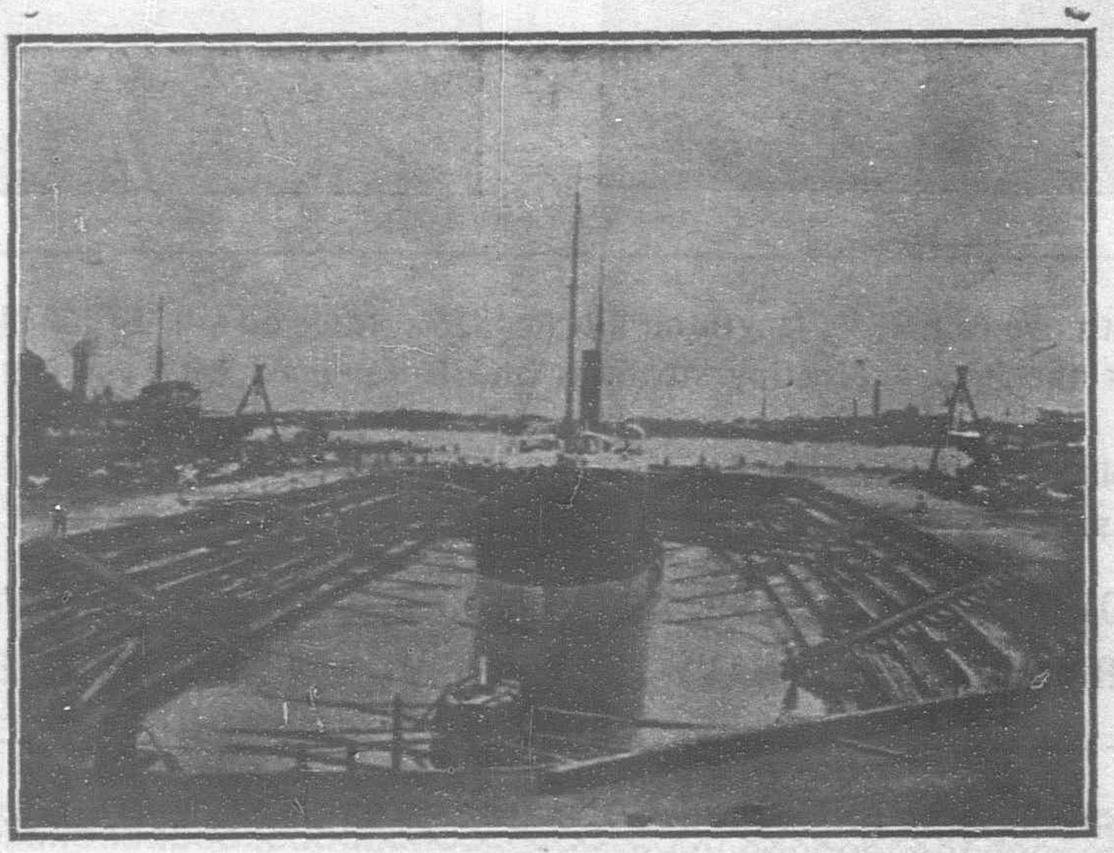
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The Docks are five in number ranging in length from 360 feet to 560 feet, and breadth of entrance from 57 feet to 83 feet, with the depth of water on the sill from 16 feet to 24 feet.

The Dock charges are very moderate.

The Water Frontage is about 1½ miles in length. Wharves and Pontoons are arranged where steamers can moor during repairs; and slips for hauling up small vessels are provided. Sheer legs capable of lifting 65 tons are placed at the various Docks.



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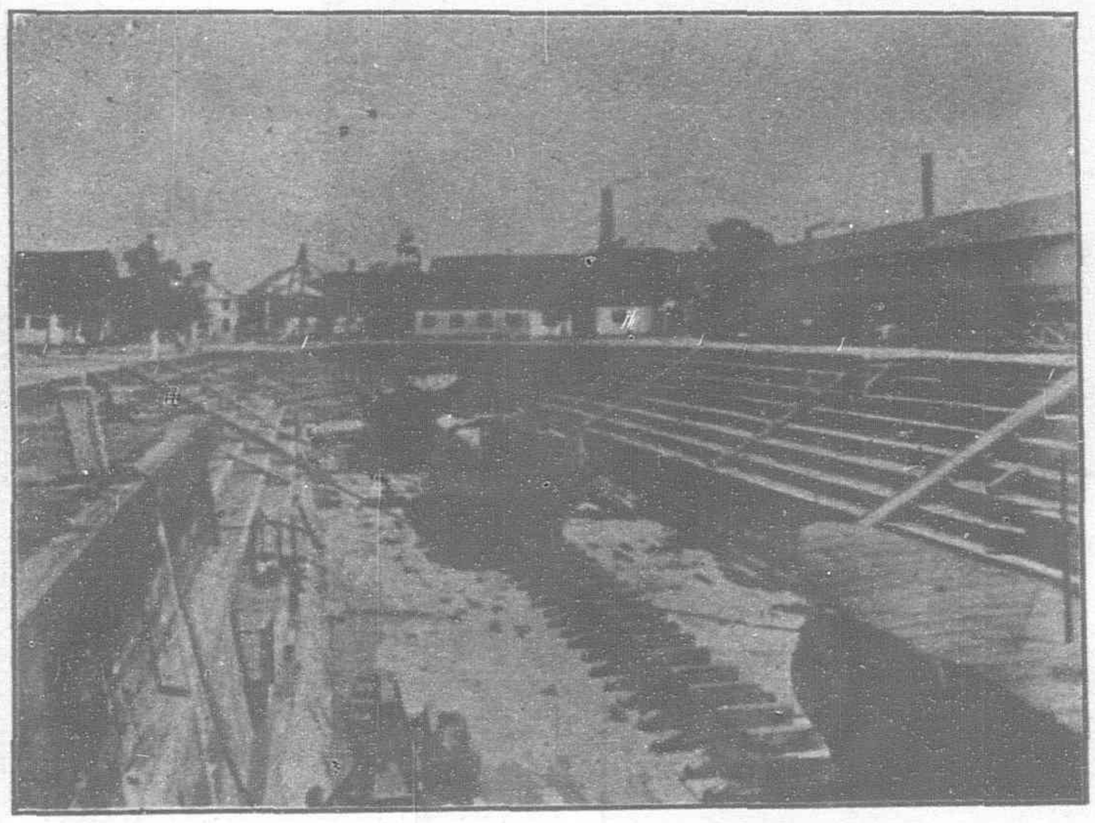
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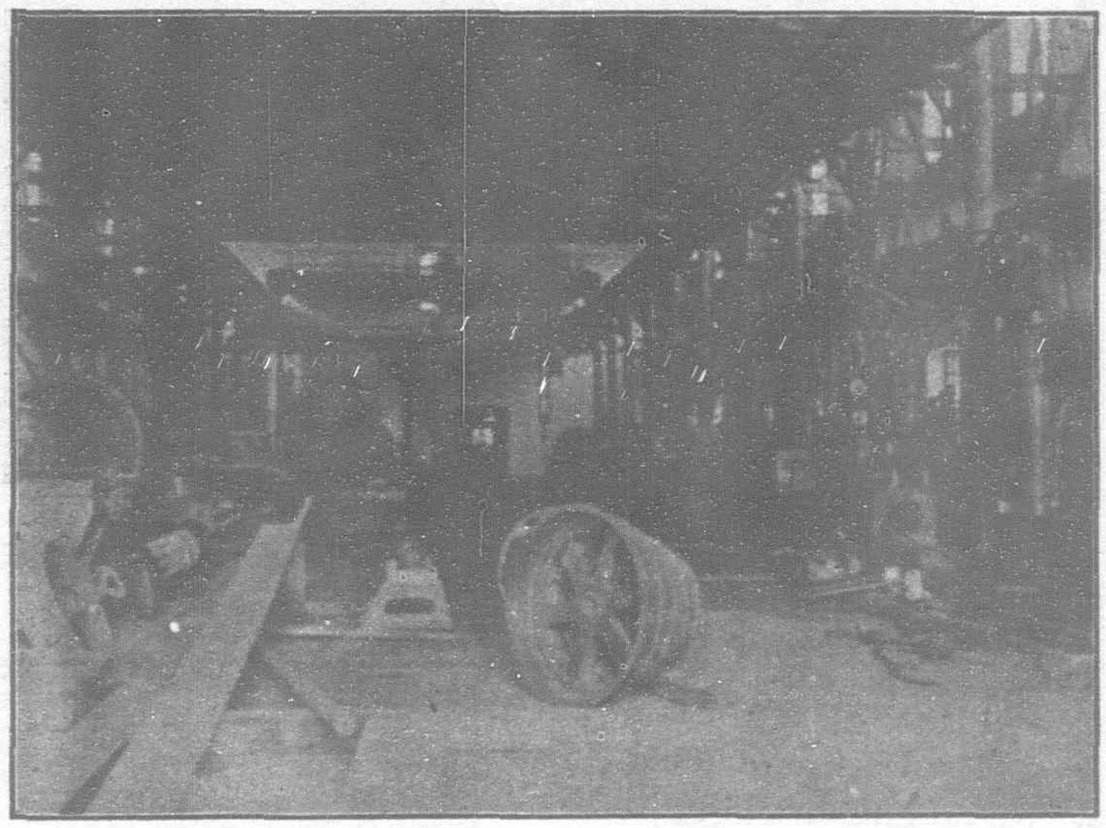
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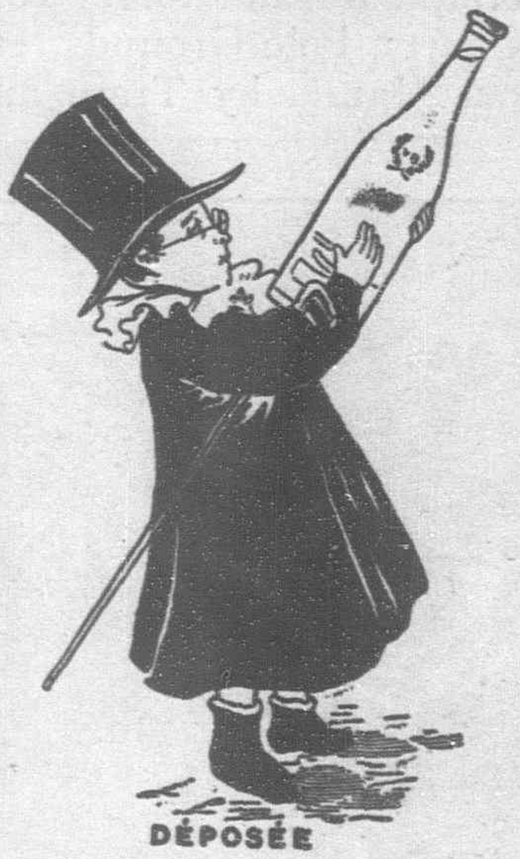
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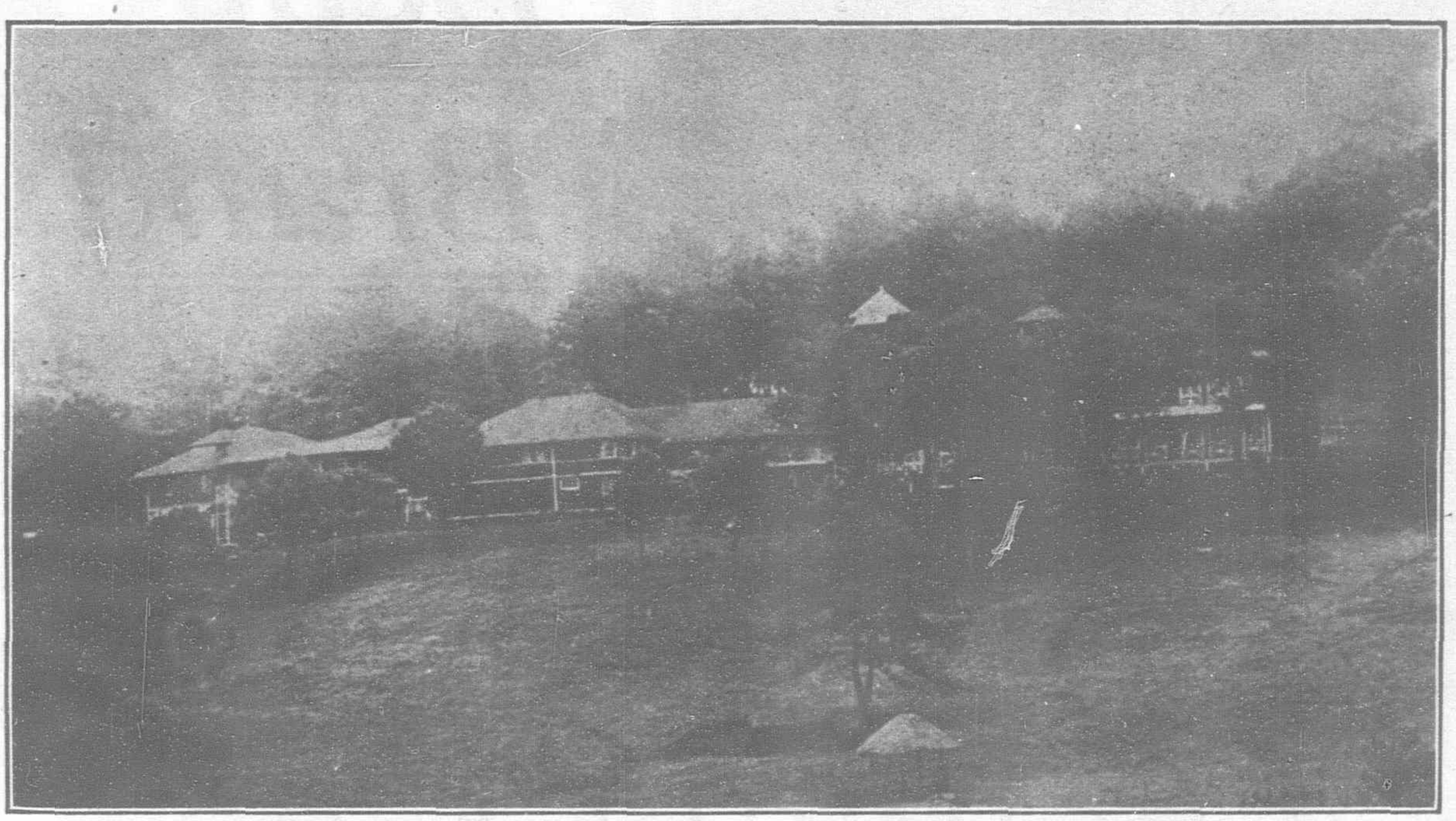
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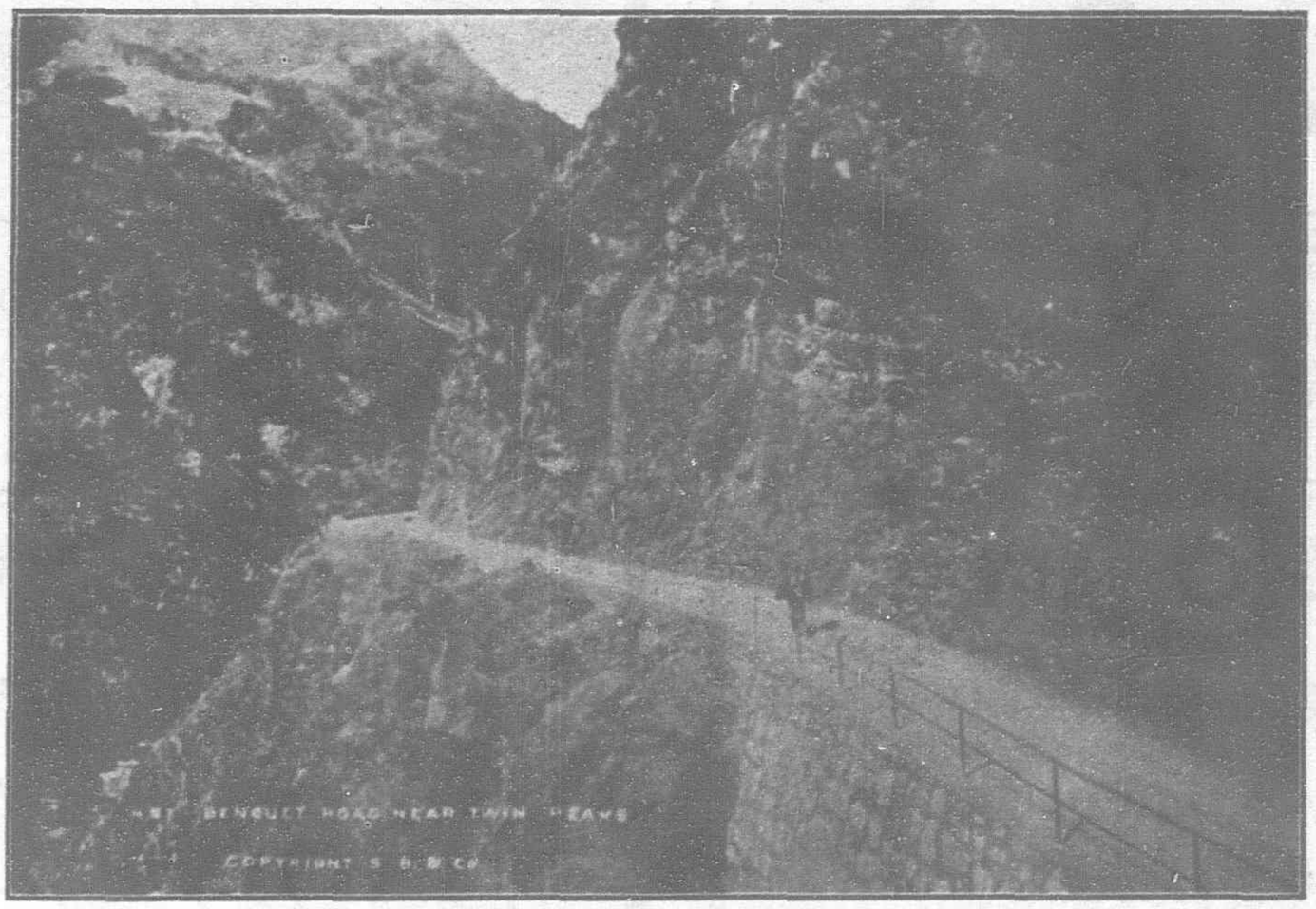


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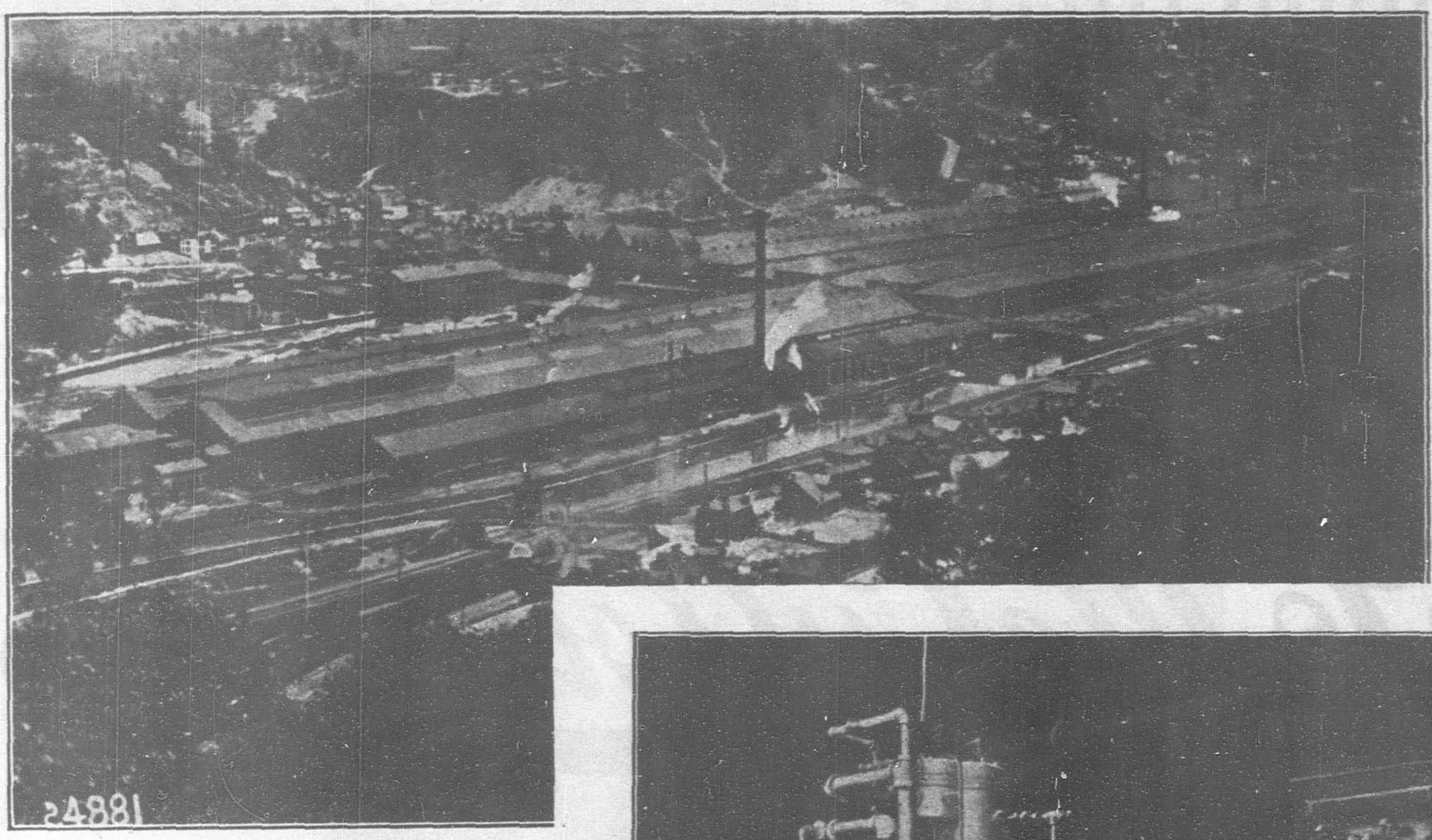
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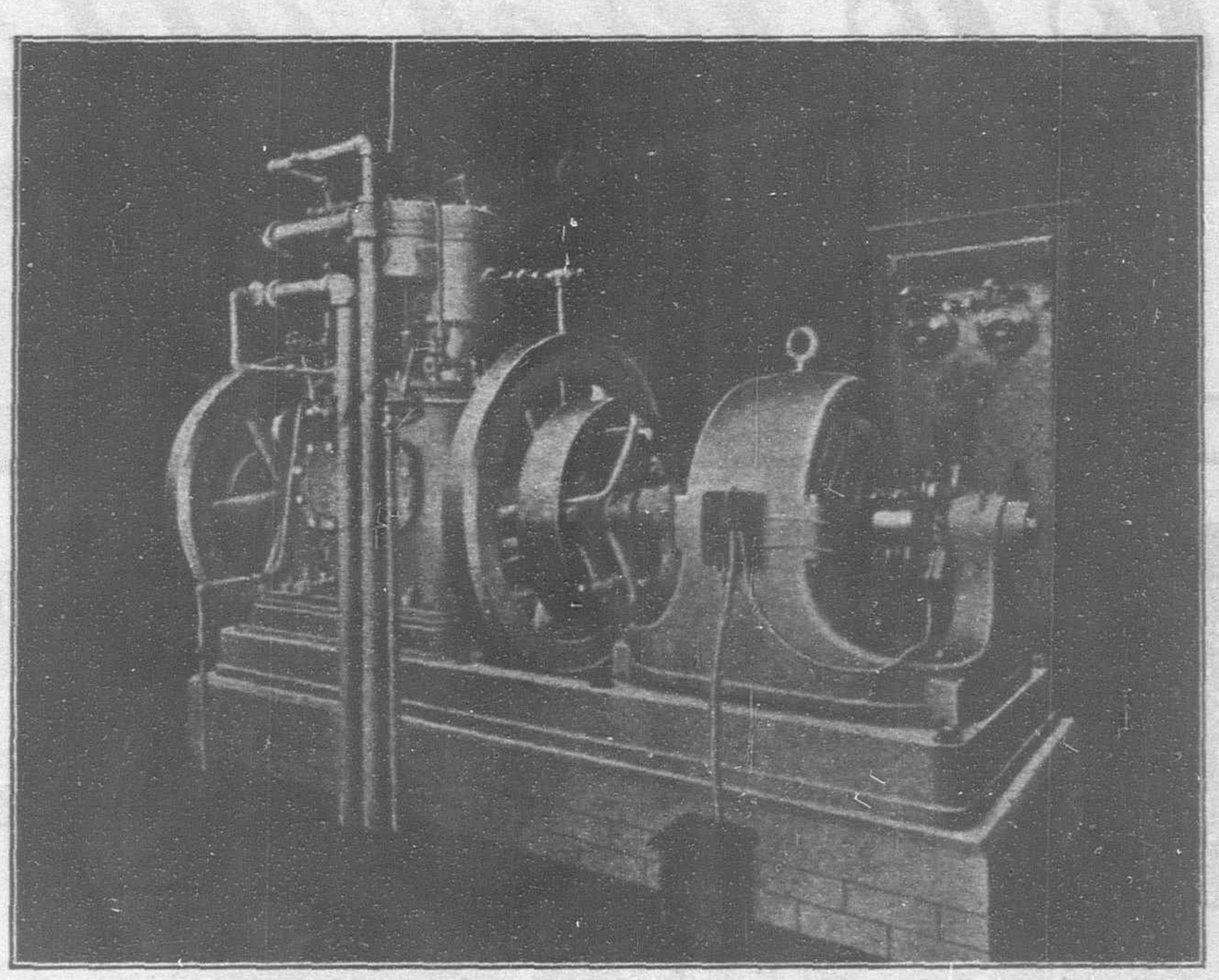
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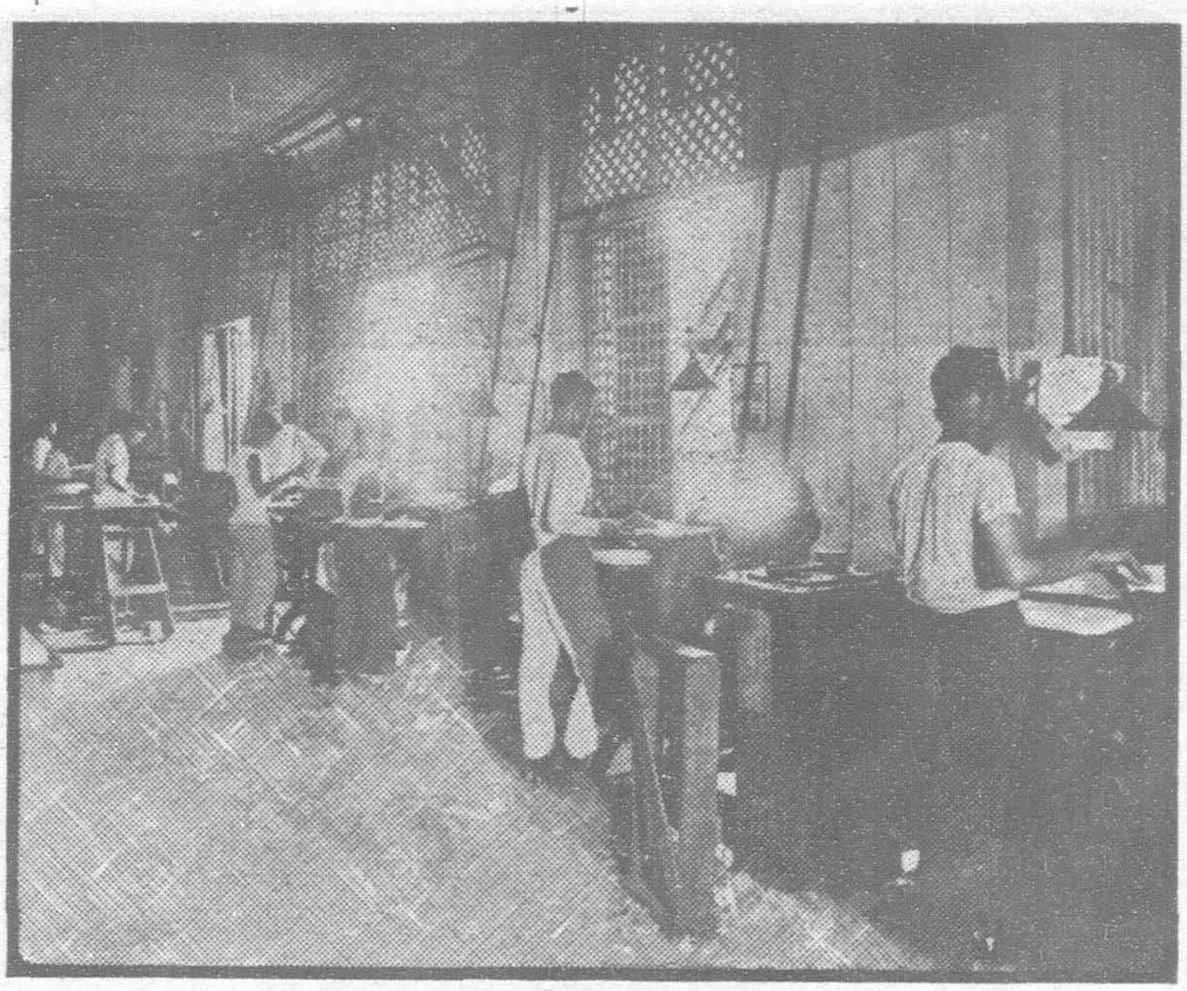
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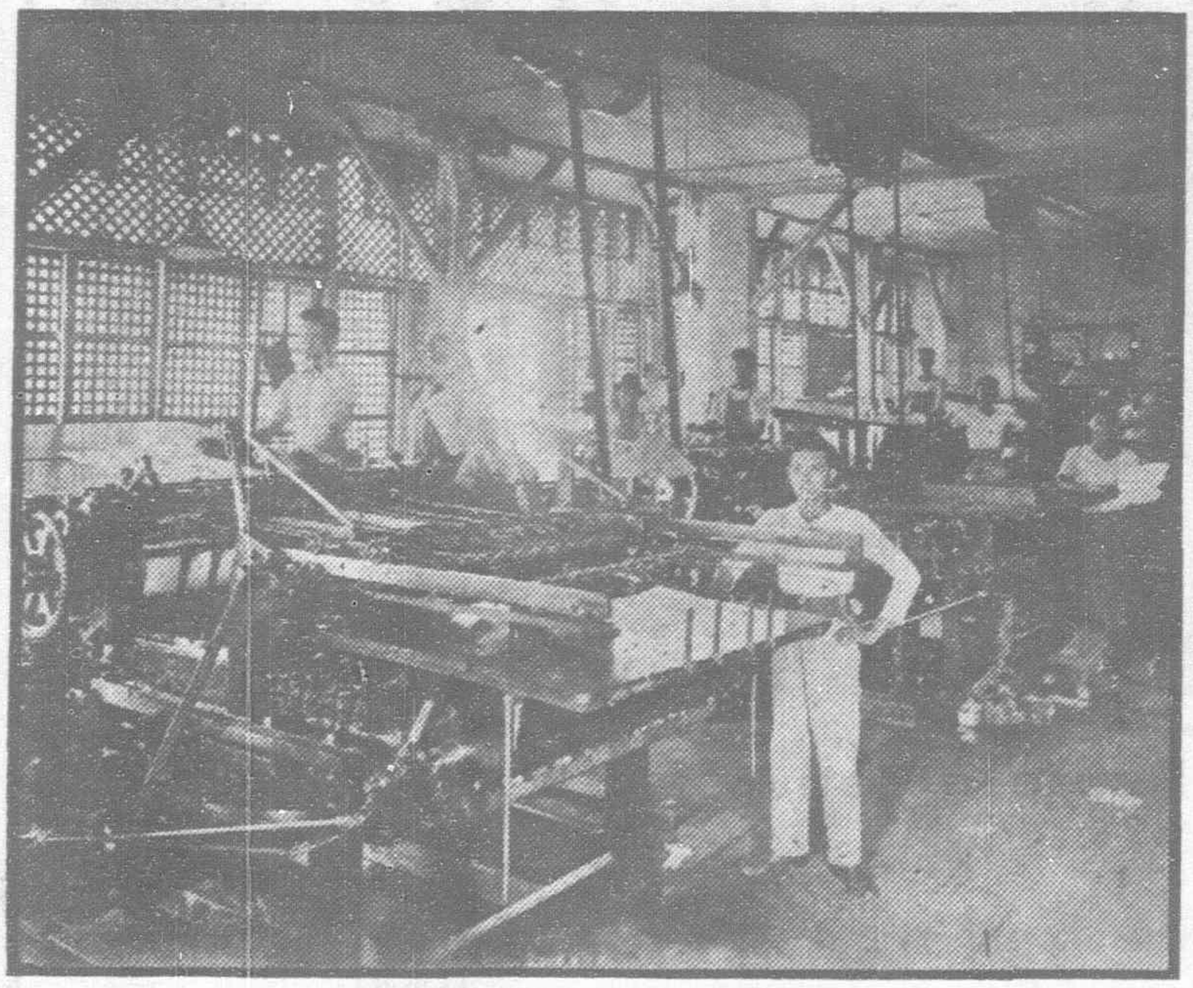


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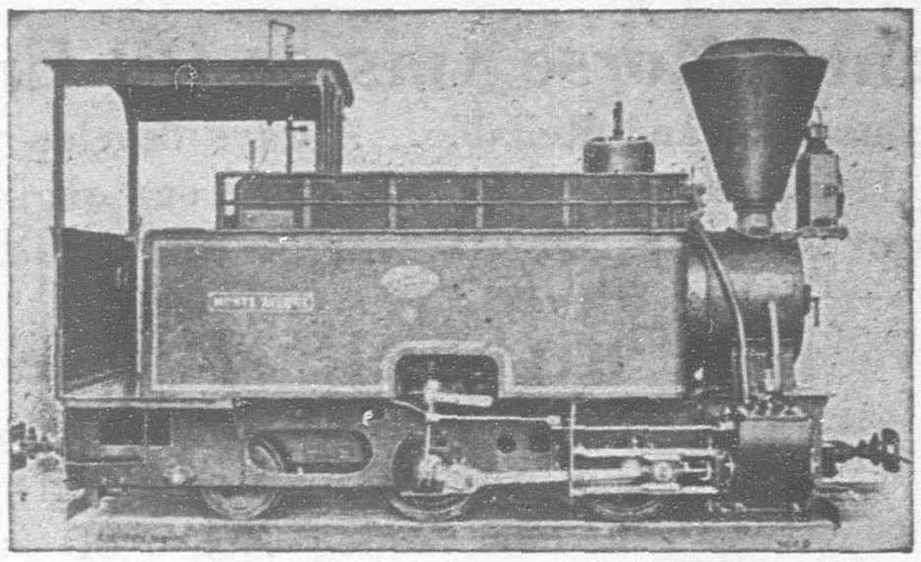
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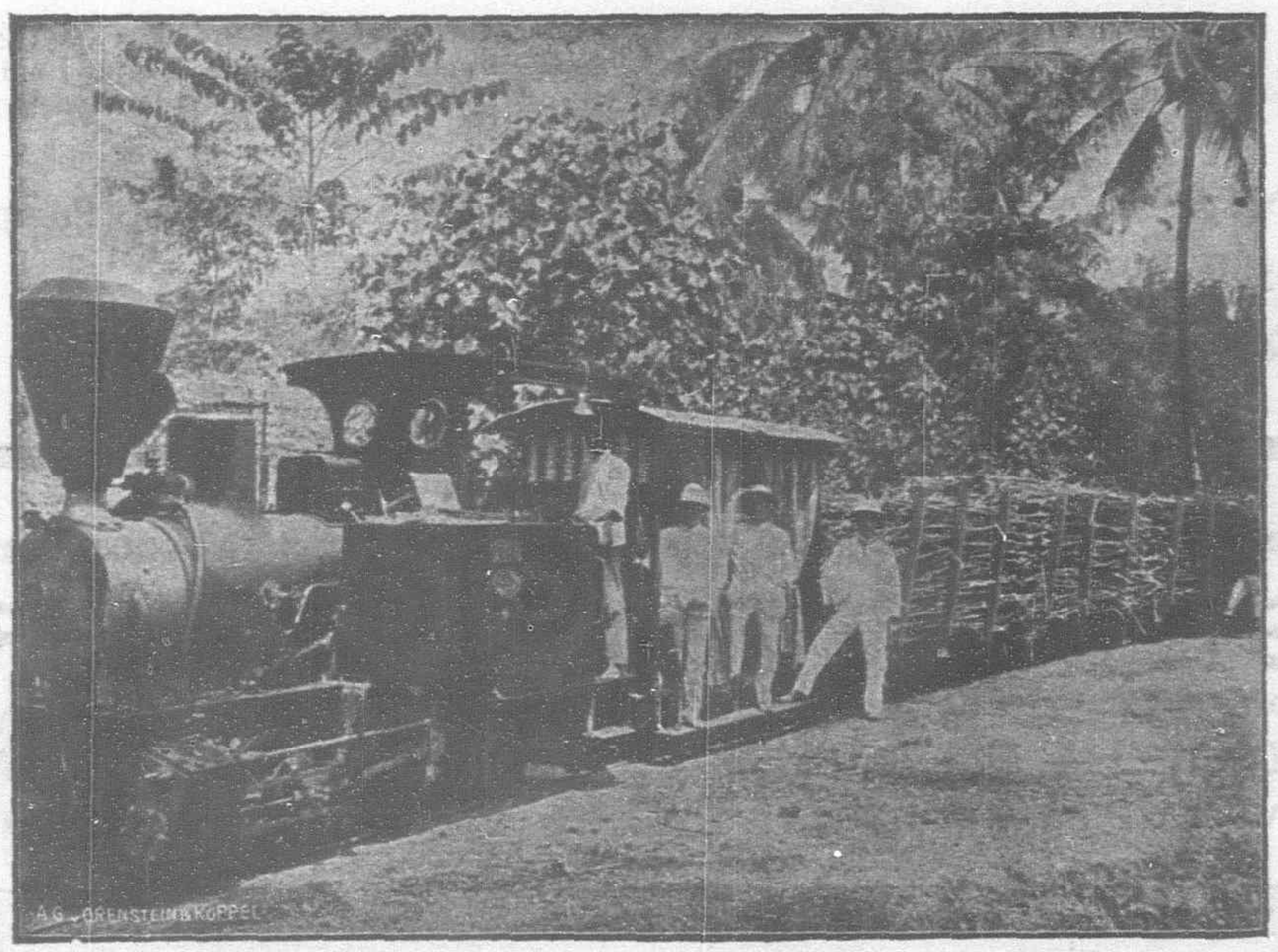
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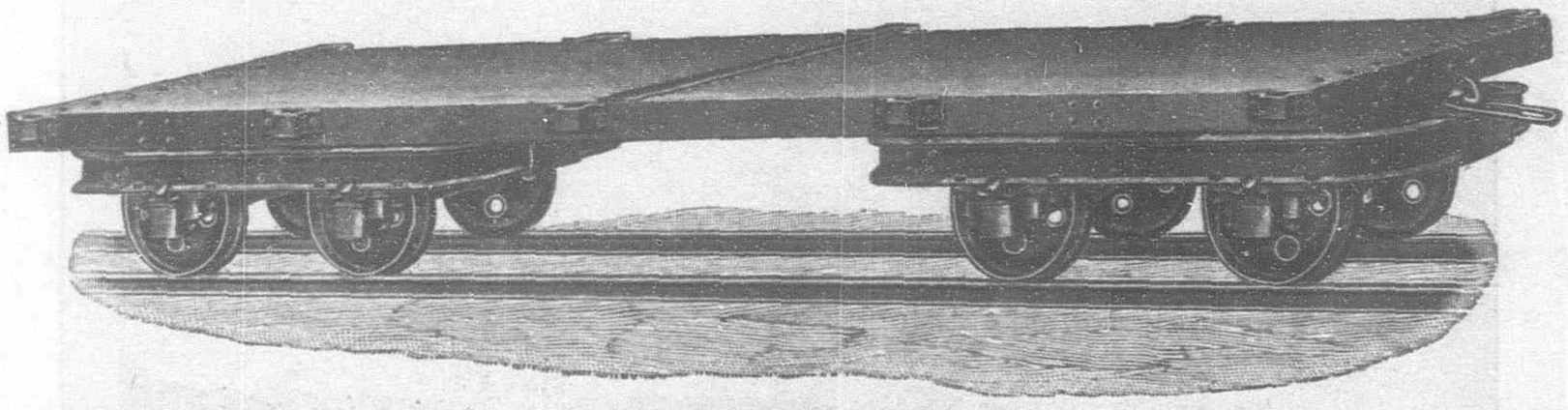
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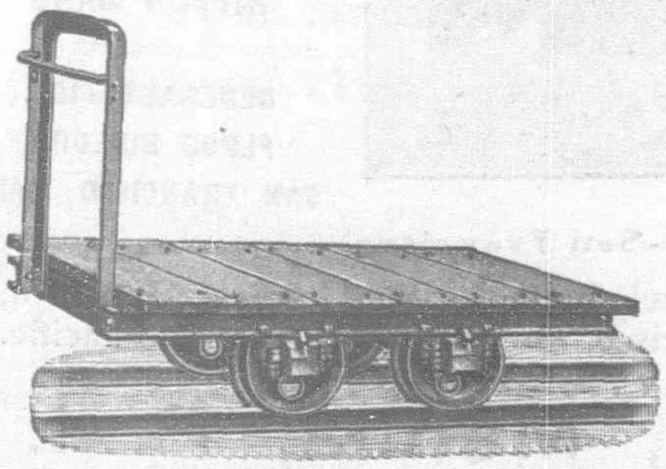
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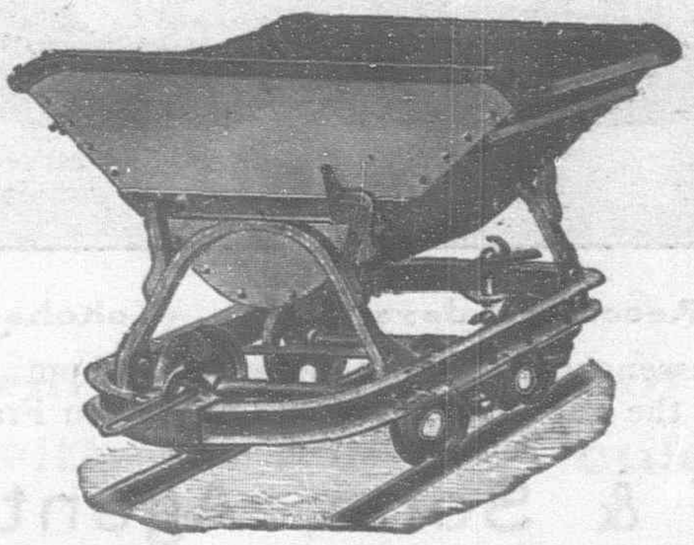
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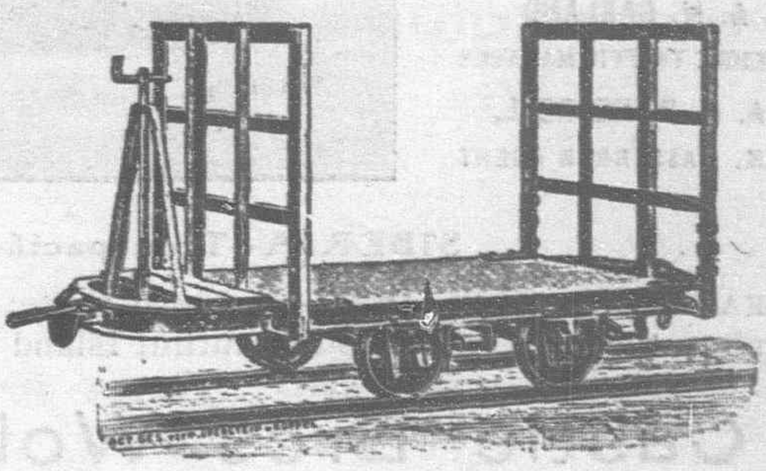
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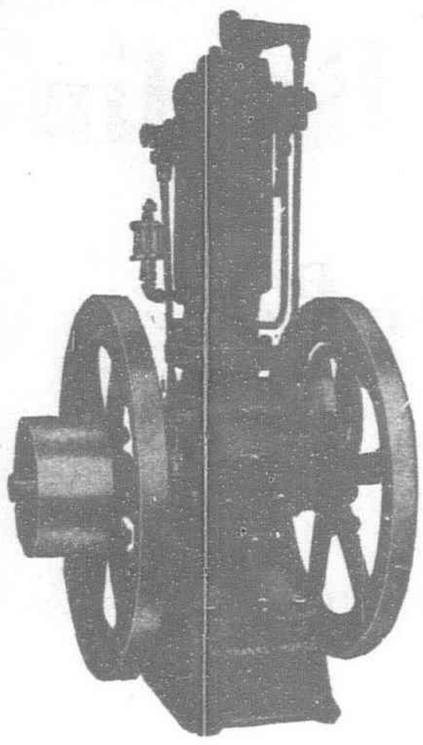


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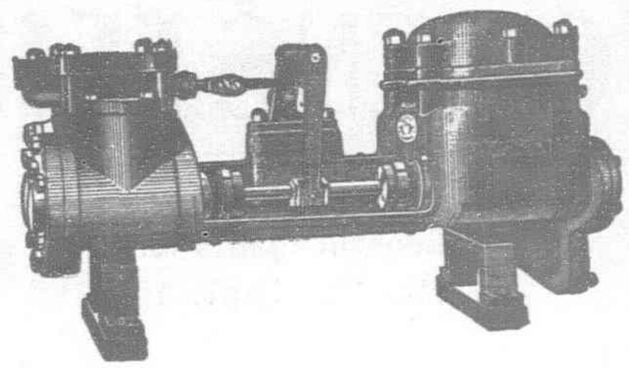








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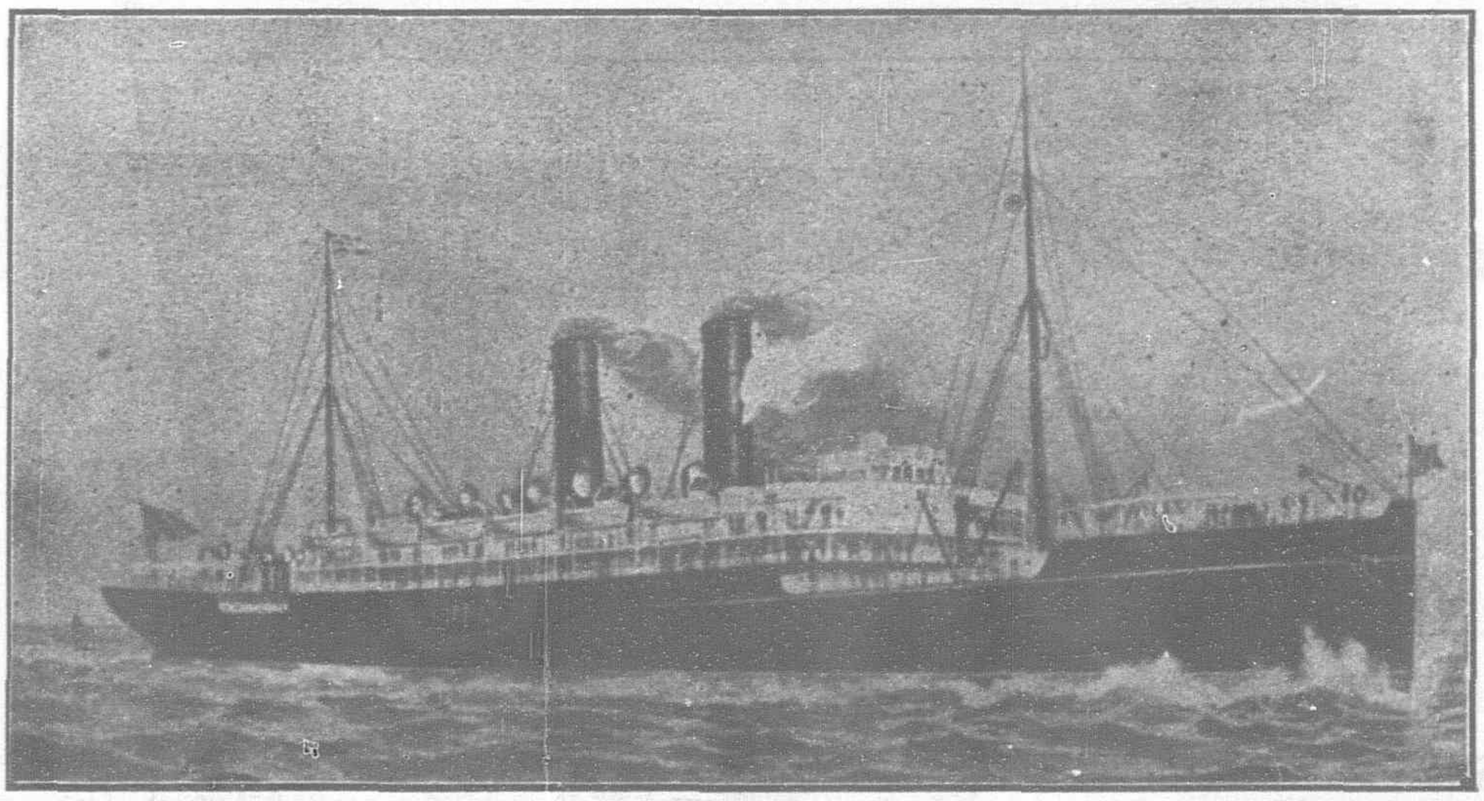
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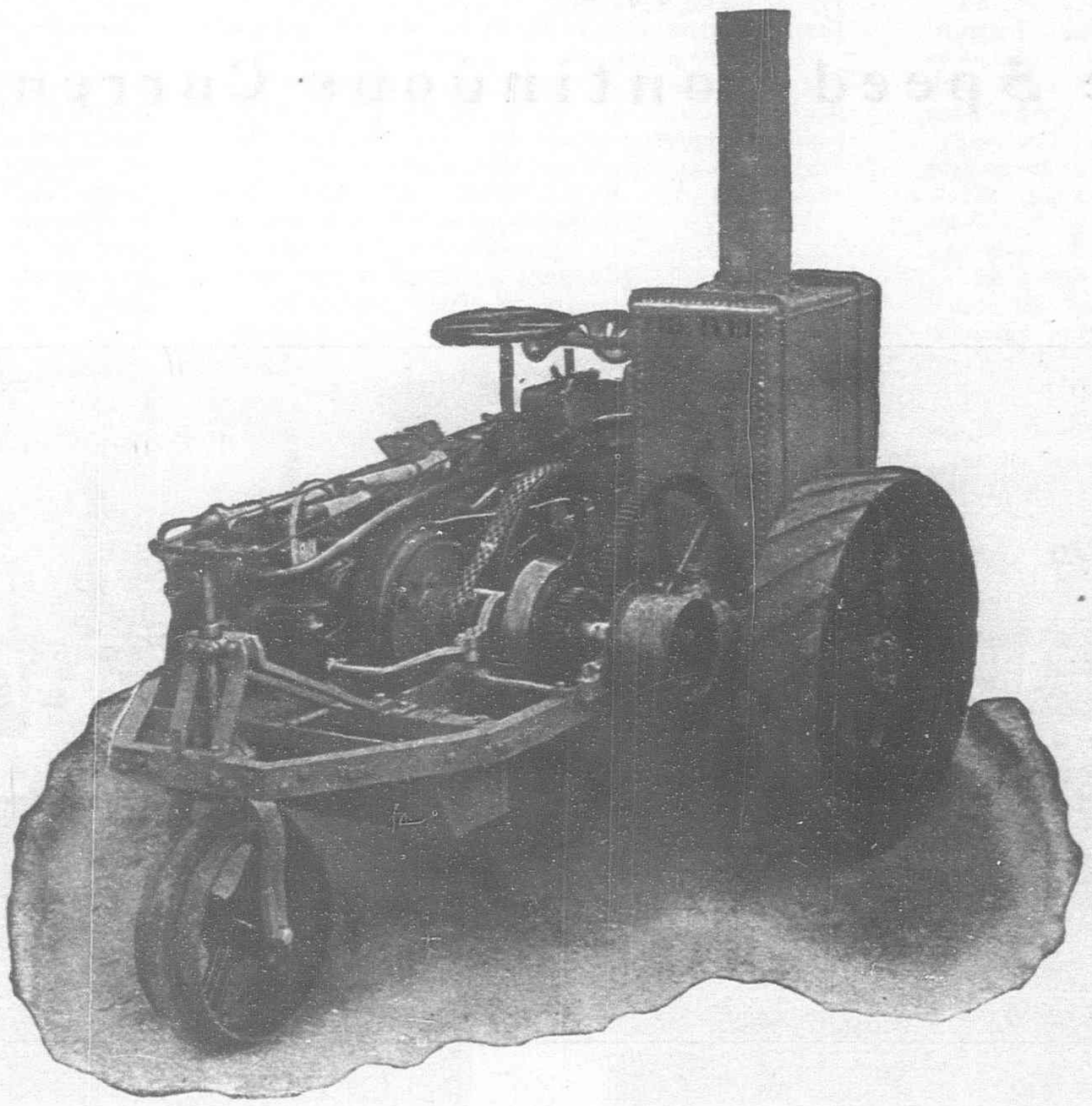
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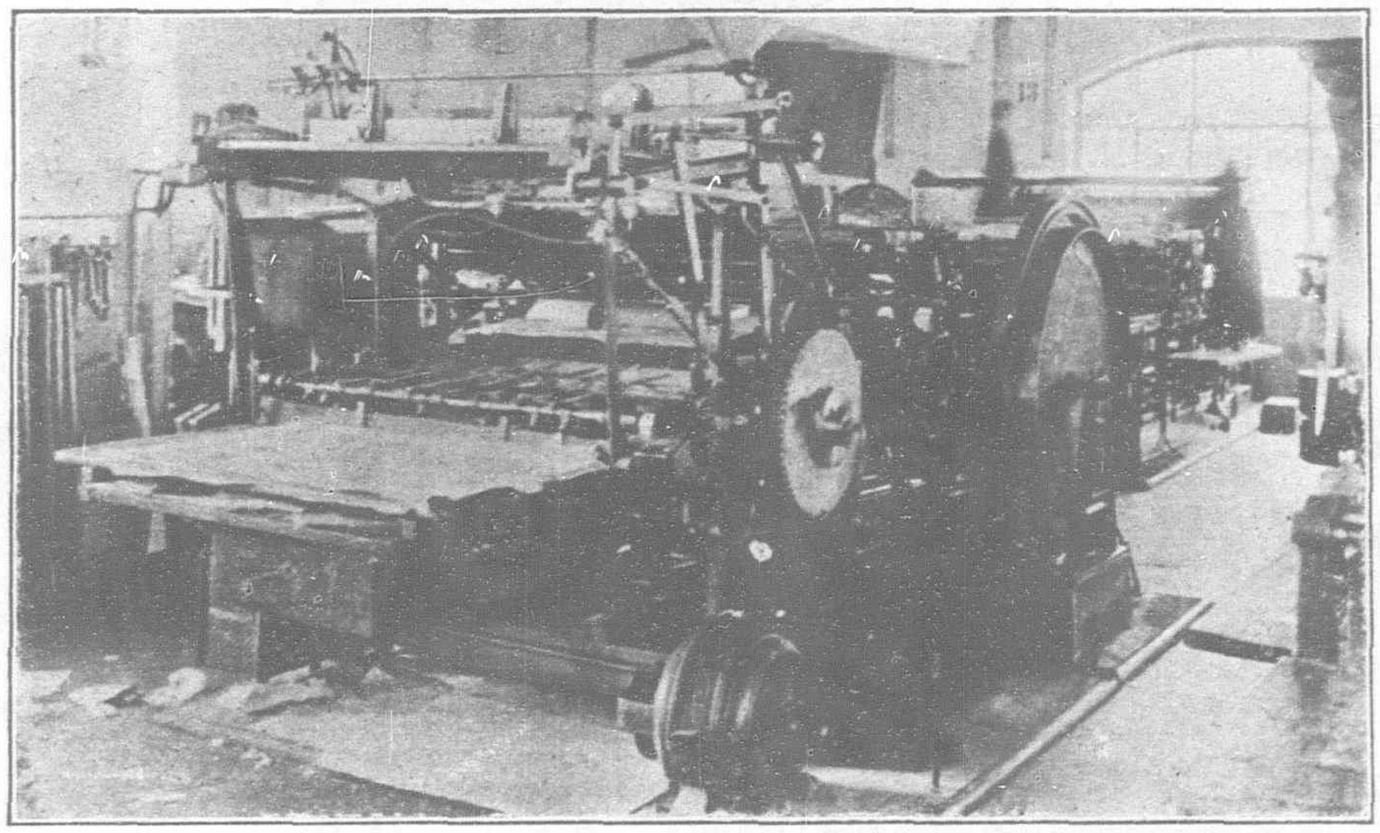
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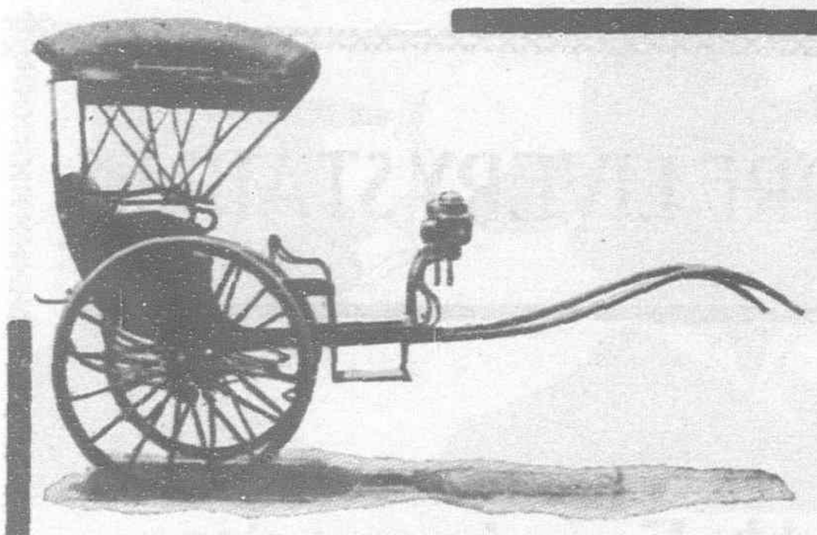
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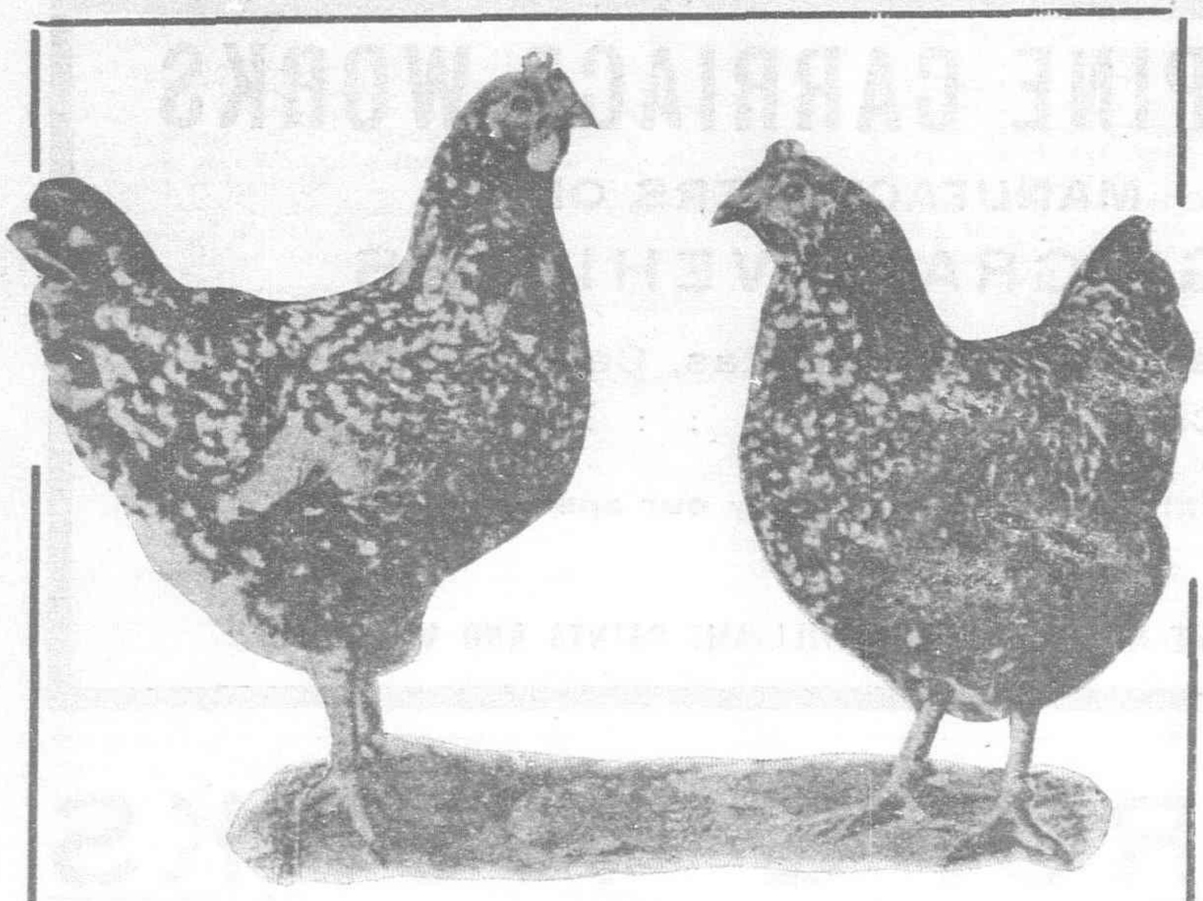
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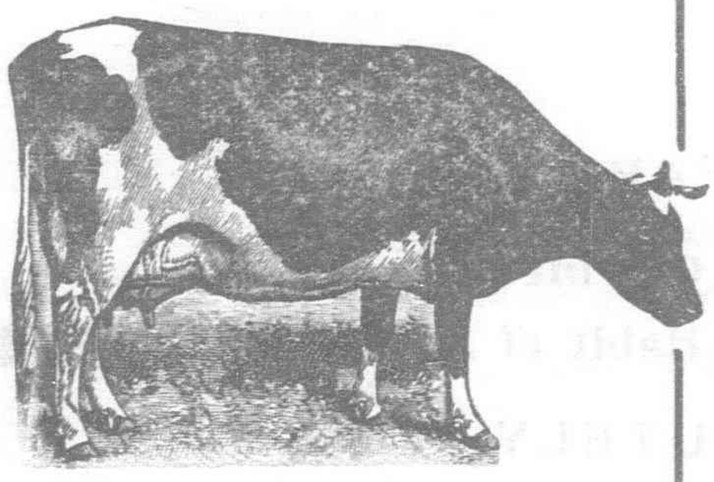


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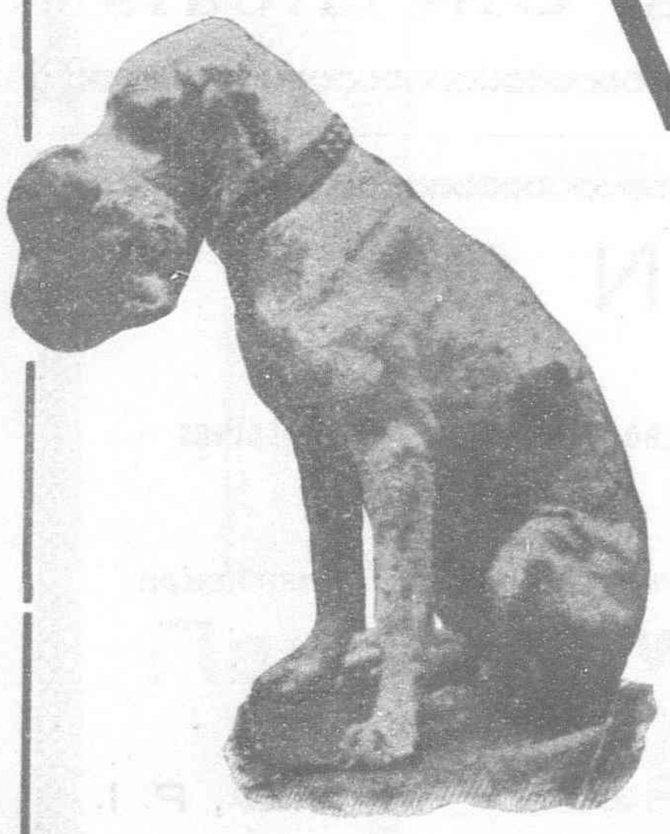


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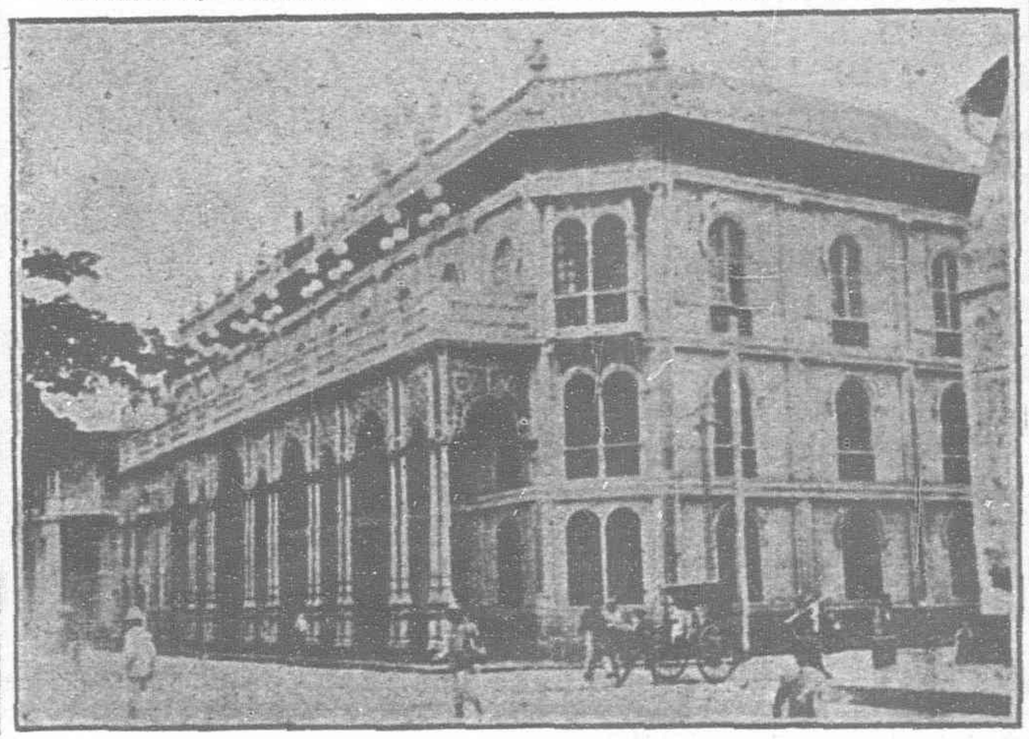
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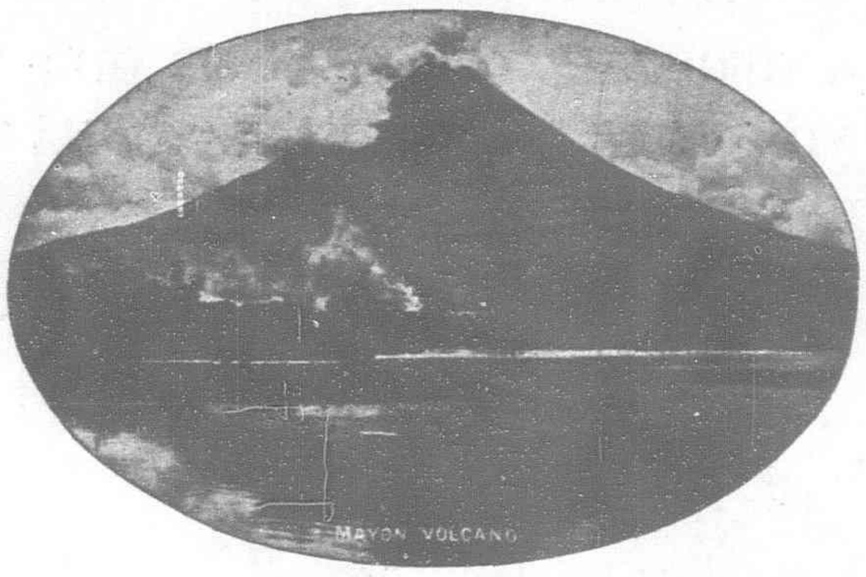
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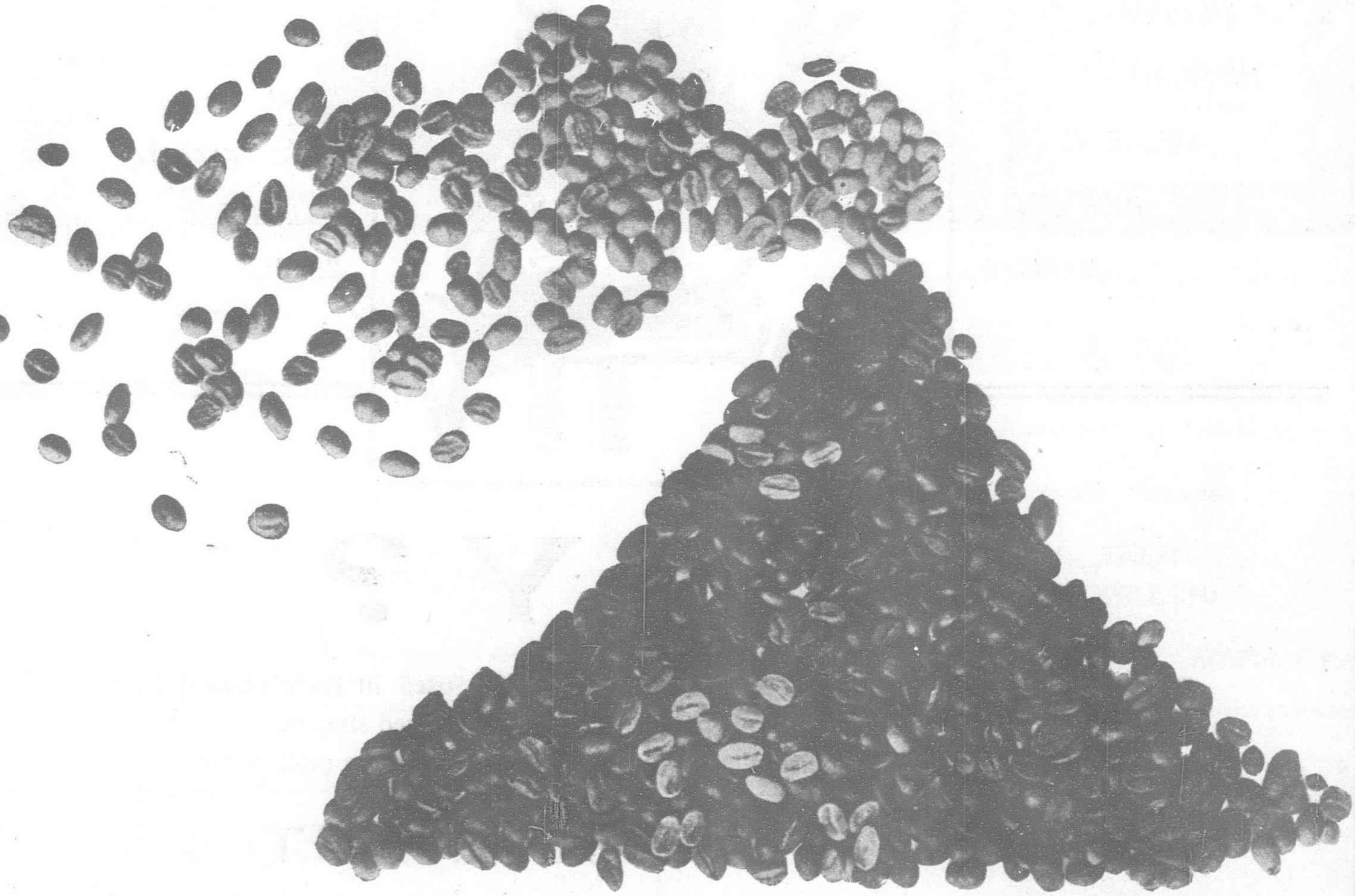
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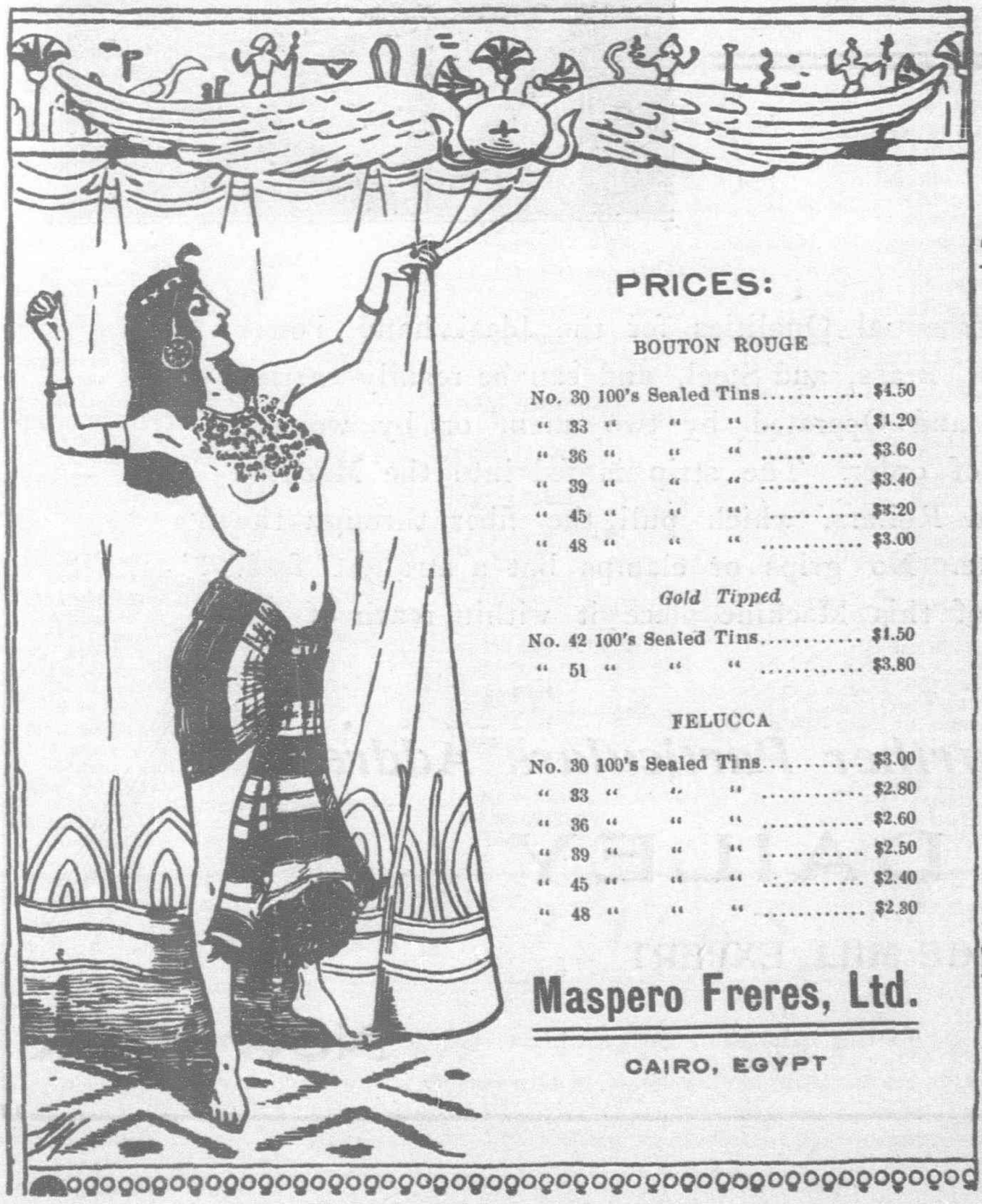
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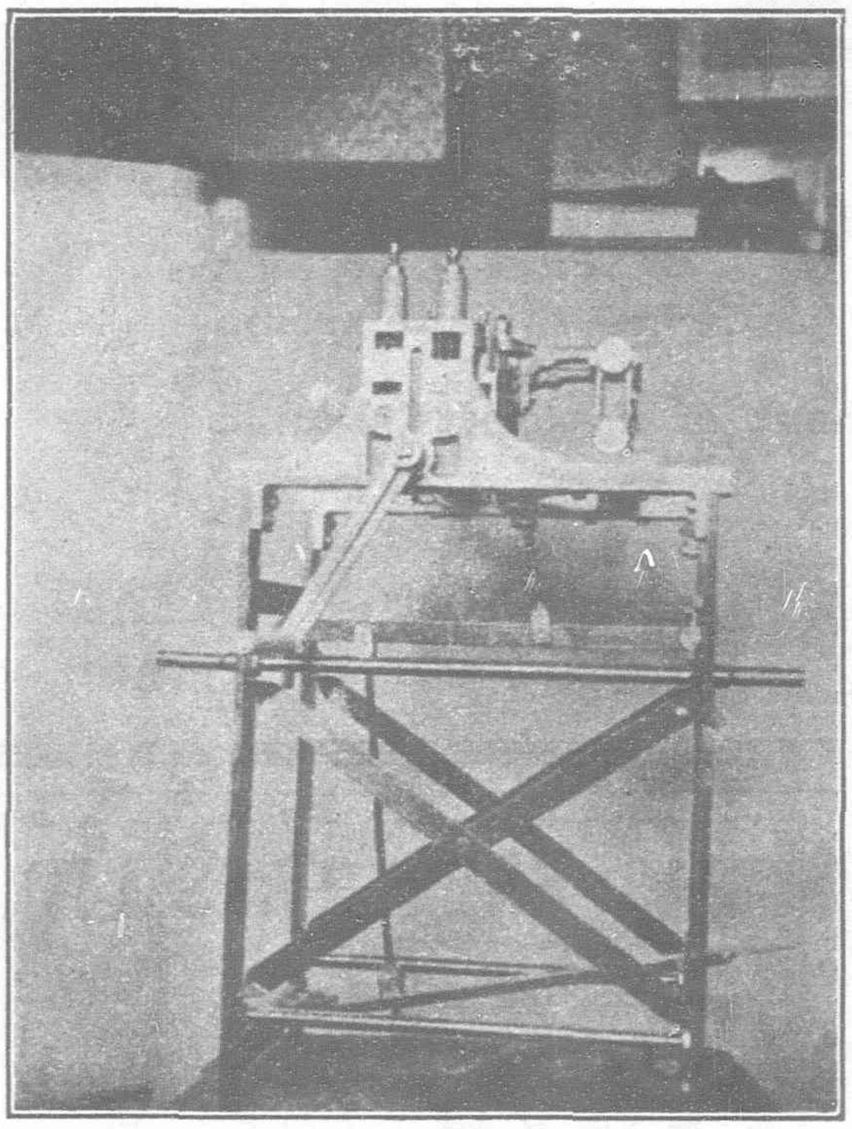
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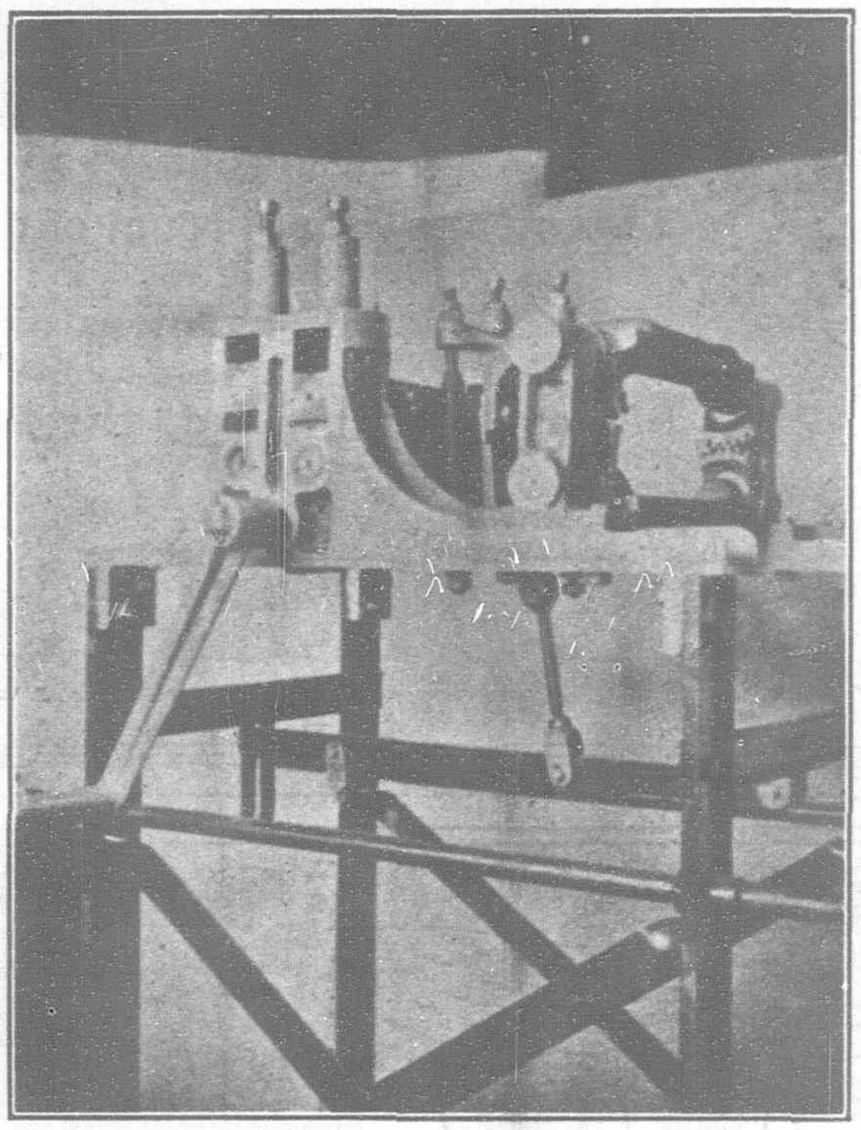
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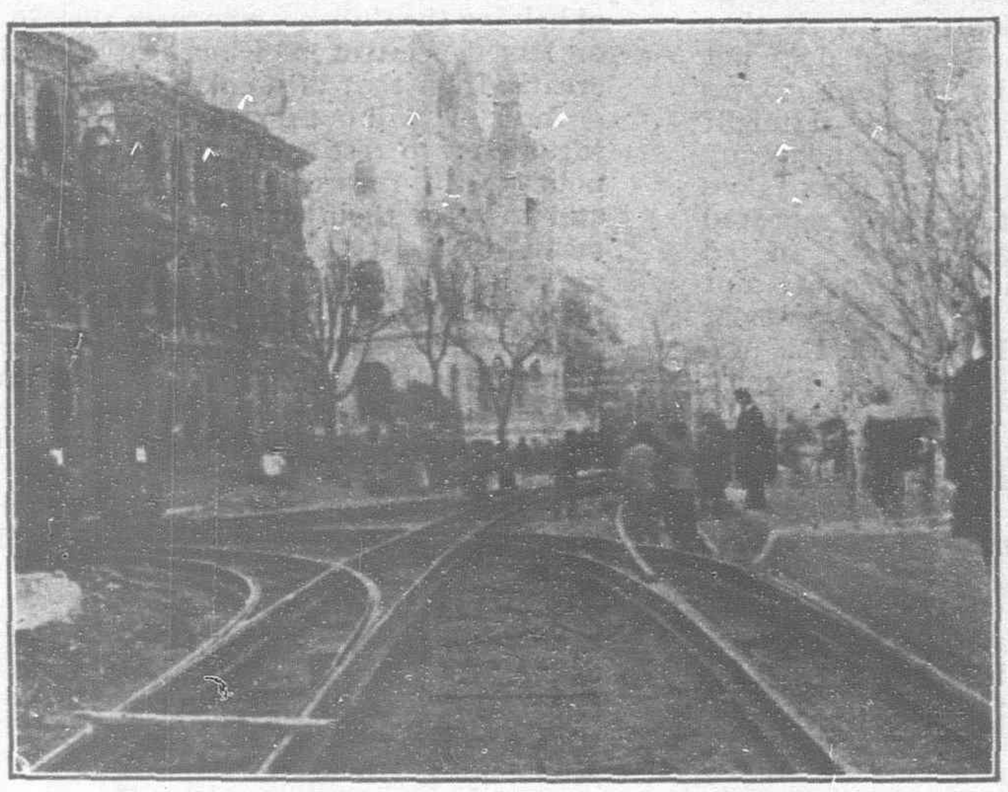
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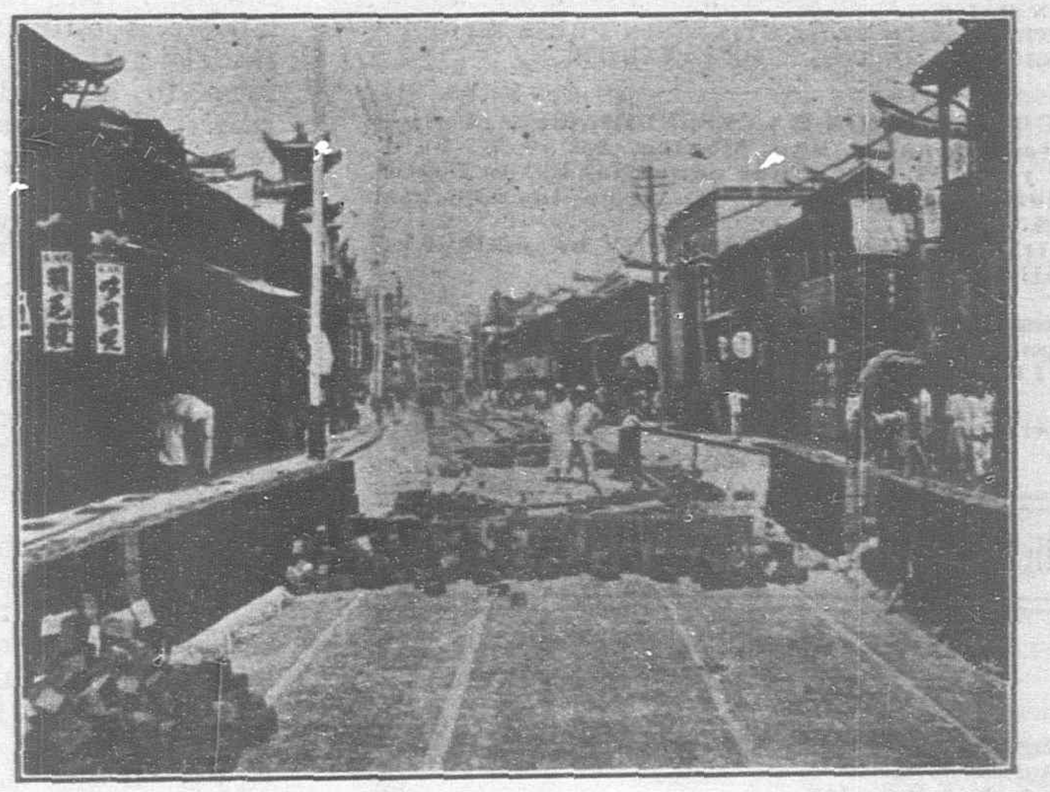
VOL. IV. MANILA, P. I., SHANGHAI, AND YOKOHAMA, SEPTEMBER, 1907 No. 4.

SHANGHAI TRAMWAYS

For a number of years the question of the introduction of tramways in the Setttlements has been discussed by the council and rate-payers, and in April 1903 the council entered into an agreement with the British Electrical Engineering Co. and the British Electric Traction Co. for a system calculated to supply the requirements of the Settlements. This agreement, however, fell through and at a subsequent meeting of the rate-payers, the council were instructed to advertise for fresh tenders and authorized to accept what, in their opinion, was the most favorable offer for the concession



SHANGHAI TRAMWAYS—COR. NANKING ROAD AND THE BUND



SECTION NANKING ROAD SHOWING WOODEN BLOCK PAVEMENT

Eventually the offer of Messrs. Bruce Peebles & Co., Ltd., of Edinburgh and London was accepted, and they have carried out the construction of the track in a highly creditable manner.

Of course the usual annoyance has been felt owing to the excavating of the streets, but it is generally conceded that the work has been done with as little public inconvenience as possible.

As will be seen from the accompanying diagram the tramway system of the Foreign Settlement, which is now nearing completion, will, when joined up as is proposed with the tramways about to be constructed in the French Concession, form a ready means of access to all parts of the Settlements. An agreement has been entered into with the council for the supply of power, and direct current at 500 volts will be supplied to the Tramway Company at a traction switchboard erected in the Municipal Lighting Station in Yuhang Road. A special plant consisting of two sets of Bellios & Morcum engines and two Bruce Peebles 600 K. W. direct current generators is about to be installed for this purpose. The engines are to be of the vertical enclosed high speed type, and are designed to run at 230 revolutions per minute.

A supplementary motor generator of 300 K. W. capacity capable of producing either direct current for the tramways or alternating current for lighting purposes is also being installed.

The route mileage of the tramways is approximately sixteen miles, 6½ miles of which are double track and the remaining 9½ miles being single track with passing loops at frequent intervals. The total length of equivalent single track being approximately 25½ miles.

The track is constructed to the meter gauge, and the roadbed is generally of a Macadam construction, with granite setts 4″×9″×5″ deep on either side of the rails which rest on a 6 inch bed of concrete, extending the full width of the track and to 18 inches beyond.

Along the Bund and in the Nanking Road, the principal thoroughfares used by foreigners, wood paving has been adopted. The blocks which are 6″×3″×4″ in depth, being laid close joined on a six inch bed of concrete, floated over with a cement floating of three parts of sand to one part cement. The blocks were thoroughly tarred before laying and are afterwards grouted and top dressed with a boiling mixture of tar and pitch, and covered with a coating of course sand. The blocks used are hardwood blocks of Australian jarrah wood, supplied by Messrs. Millars & Jarrah Co., Ltd., and this paving, which is the first wood paving that has been used for roadwork in China, promises to prove very satisfactory.

The rails are of the grooved girder pattern weighing ninety pounds to the yard, and of the British Standard.

On the Committee's No. 1 Section heavier rails of ninety-six pounds to the yard are being used with a slightly wider groove on sharp curves.

The joints are formed with B. S. C. No. 1 Section fishplates fished up to the rails and bolted into place by six one-inch bolts.

Forest City protected copper bonds are inserted under the fishplates two to each joint, to bend the rails together, and the track is also cross-bended at short intervals to ensure a satisfactory return circuit.

Bayliss, Jones & Bayless patent spread nine feet apart to keep the rails to gauge.

The points and crossings are of manganese steel and 12 feet in length having a radius of 150 feet. The angle of the crossing is 1 in 8.

The overhead trolley wires are supported where the track is single and the width of the roadway permits on bracket arms, which are carried on steel poles planted six feet in the ground and spaced 40 yards, and where the track is double similar poles with span wire suspension has been adopted. The trolley wire is of circular section 3-0 Standard Wire Gauge, and is fixed at a height of 21 feet from the ground, Phosphor bronze ears being used for the suspension.

Insulators, guard wires, section switches, lighting arresters, choking coils, etc., are provided in accordance with the rules and regulations of the British Board of Trade and a complete telephone system is also being installed, providing means of communication between the section boxes, power house, and car depot.

The transmission cables are all being laid underground and will feed the overhead line at convenient points.

Special attention has been given to the insulation of these cables which are being supplied to Messrs. Bruce Peebles & Co. by Messrs. Callendars Cable Co. and these are being laid on the solid system, the cables resting on glazed earthenware bridge pieces in vitrified earthenware troughs, and the vacant spaces between the cables and the troughs being filled with refined Trinidad bitumen.

(Continued on page 100.)

THE FAR EASTERN REVIEW

GEO. BRONSON REA, M. E.

PUBLISHER AND EDITOR

COMMERCE :-: ENGINEERING :-: FINANCE

A Monthly Review of Far Eastern Trade, Finance and Engineering, Dedicated to the Industrial Development and Advancement of Trade in the Philippines and Far Eastern Countries

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MANILA, SHANGHAI AND YOKOHAMA, SEPTEMBER 1907

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THE TONKIN-YUNNAN RAILWAY

The construction of this railway has been the subject of much criticism of the French authorities from time to time in regard to the treatment of the laborers employed. It now develops that these reports were unfounded, according to the most reliable information, and that no less than the report of C. H. Brewitt-Taylor, commissioner of customs at Mentze for the year 1906. The commissioner makes particular reference to this important work and goes extensively into the conditions good and bad with which the French colonial government had to contend. His conclusions point to a most humane policy in dealing with the labor. This included the expenditure of large sums of money in the maintenance of hospitals and in providing adequate medical service throughout the entire construction.

The criticisms appear to ha e been based on the surface indications of the battle with disease in the unhealthy Namsi valley. This section once completed there appears to have been a prompt elimination of complaint of any kind and it is well-known that the battle against native ignorance was far more serious than that against disease. The French government, according to the report of the commissioner, did everything in its power to alleviate suffering and to make the laborers as comfortable as possible, but this task was no easy one when the lack of co-operation on the part of the natives in battling with disease is considered. In fact the work on this unhealthy section of the road was abandoned in the summer and resumed in the winter months in order not to expose the laborers.

The wages paid ran all the way from 40 to 60 cents a day and, in addition, rations were supplied. The cost per day of the average laborer is estimated at about $1.20 so that the claim that they were underpaid does not seem to be well founded. To feed 50,000 laborers is no small undertaking, and it might be expected that grumbling broke the monotony in more than one camp. However, there does not seem to be any justification for the repeated attacks on the French management. Indeed it would seem that a well organized attempt was made to discredit the French government and to encourage among the Chinese the prejudice against foreign investment. It is most fortunate that the enemies of the management have been confounded and the public set right by the unequivocal statement of Commissioner Brewitt-Taylor.

Referring to the magnitude of this undertaking the *Hongkong Telegraph* says:

"It is stated that the direct distance between Hokow and Yunnanfu is nearly 300 kilometers; that along the line, graded that no incline exceeds 25 millimeters per meter, and with no curve of less than 100 meters radius, is 463 kilometers. The country being wholly mountainous, of red clay and limestone, tunnels and bridges are numerous. There are 147 tunnels, aggregating 15¼ kilometers in length, the longest, now nearly finished, being 650 meters. Of these, 105 have been actually pierced and are in course of enlargement to the necessary section. Only four are as yet untouched. There will be 74 bridges of all sorts over 20 meters long, some of masonry, some of steel. The longest in masonry will be 70 meters with 10 arches; the longest in steel, of 17 girders of 8 meters each. One steel bridge of 65 meters span is a single girder. The line starts from Hokow at a height of 90 meters above sea level, passes through a 315-meter tunnel at Milati at a height of 1,700 meters, thence descends to Amichow height 1,063 meters, passes Iliang at a height of 1,635 meters, and Shuitang at 2,019 meters, whence it descends to Yunnanfu, 1,886 meters."

SUGAR BARONS ARMING FOR THE FRAY

For the first six months of the present year the policy of the American Sugar Industry and Beet Sugar Gazette, one of the leading sugar journals of the world, was marked by a spirit of fairness that was remarkable in view of the selfishness of the interests in America that it is supposed to represent. But now all that is changed. In the issue of that journal under date of July 20, the management announces the restoration to the head of the editorial department of Mr. Frank Roderus and in the same column repudiates the policy of the journal for the six months ending June 30. We quote:

"The new management, which is really the old with a short interregnum, takes this opportunity to repudiate unqualifiedly the editorial policy pursued during the past six months. It is needless to define what that policy was. Suffice to say that in the absence of a management possessing adequate practical acquaintance with the industry and experience in the conduct of this publication as well as in the history of American sugar, a policy was pursued which was not satisfactory to the trade nor in harmony with the past record of this publication.

"Perhaps the most important question that will come up for consideration in the near future is that of tariff revision, or tariff concessions to other sugar producing countries in connection with the colonial policy of this country.

"It is true that the latest semi-official utterance from the present administration contains assurances that there will be no tariff revision proposed by the Republican party before the next presidential election. It is possible, however, that this assurance refers only to a general revision of the protective tariff, while sugar may be taken up in connection with colonial affairs, which the general public would not consider as directly connected with the tariff question. In the past history of the sugar industry in this country it is just such covert attacks that have proved the most dangerous and injurious to American farmers and manufacturers. The concessions made some years ago to Cuba are an instance in point. This matter did not come up under the head of tariff revision, but under the specious plea of helping the Cubans, who were then in a more or less dependent position, not differing very greatly from that of a colony except in matter of form. It will not do, therefore, for American sugar men to rest assured in the statements of policy with regard to the tariff in general, and to relax their watchfulness. This journal means to insist that the party in power shall abide by the declaration embodied in the Republican platform of June, 1896, which said: 'The Republican party favors such protection as will lead to the production on American soil of all the sugar which the American people use and for which they pay other countries more than $100,000,000 annually.'"

"It is possible that the time may come when the American sugar industry will be sufficiently developed to compete successfully with that of other sugar producing countries. But until that time arrives, if it ever does, this journal will continue to urge upon the sugar men of the United States the necessity of constant effort, and watchfulness *to prevent further favors being granted to tropical sugars*. Other countries have successfully developed their domestic sugar industry by the assistance, not only of protection, but of bounties, until today their industries are able to stand without these aids. The American sugar manufacturer does not ask any bounty; he merely asks protection until such time as the natural development of the industry will enable him to compete on an equal footing with sugar producers in other countries."

So now we are to understand that any kind words, any spirit of fairness that has crept into the columns of the journal during the months it did not happen to be under the selfish supervision of the sugar trust, are repudiated and that a campaign is to be inaugurated with the object in view of serving monopoly at the expense of the interests of American manufacturers, and the Filipino people who are justly entitled to special privileges not accorded foreign nations, so long as those privileges do not endanger any American industry.

The sugar interests of the United States have been invited to point out in what way the importation of Philippine sugar into the United States free of duty to an amount not in excess of the shortage annually, woud injure the industry there. Have they responded?

The vote of the House of Representatives on the subject is sufficient answer to that question even if the questionable tactics of the

enemies of the Philippines in the Senate in their desperation, be overlooked. It is another phase of that desperation that has driven the barons to seize a free and fair press and exploit sentiment to further their ends.

Truly there is reason for the sugar barons to consider their case desperate. The manufacturing interests are beginning to have something to say about the treatment of the Philippines. The announcement by the friends of Philippine sugar that they would oppose any measure favorable to it, that would endanger the American sugar industry, has engaged the attention of the manufacturers of America who previously labored under the impression that the Philippines desired to flood the American market with sugar and drive the American sugar producers out of business. They have investigated the matter and find that in the next century the Philippines could not supply the shortage in America let alone the increased difference each year between the amount produced and the amount consumed. The manufacturers have asked the sugar barons to point out where the importation of Philippine sugar would injure the home industry and up to date this question remains unanswered.

The manufacturer has machinery to sell and in the Philippines there is every indication of a splendid market if the Filipinos are given a square deal. The manufacturers of the United States are opposed to any legislation liable to interfere with the development of any American industry. So are the Americans in the Philippines, yet they ask and ask with a clear conscience that Philippine sugar be given free entry into the United States for an amount not greater than the difference between the amount of sugar produced in the United States and the amount consumed in the United States.

That the friends of the Philippines will continue the battle for fair play in the next congress, is to be expected and the victory is practically conceded. This seizure of *The American Sugar Industry and Beet Sugar Gazette* by the barons and the rudeness which characterized it, demonstrates how alarmed, how hysterical they have become over the prospects now that they realize that the people of the United States refuse to be bamboozled longer by the time worn sophistries of monopolists.

Public sentiment has undergone a remarkable change since the Philippine delegation first started after a reduction of the tariff for Philippine sugar. Slowly but surely, the effect of the campaign of misrepresentation throughout the United States carried on under the direction of the sugar barons has been overcome. By the time the question is again being discussed by Congress, the trust will realize that it is useless to struggle further against the inevitable and even the attempt to manufacture sentiment to overcome the prevailing spirit in favor of justice to the Philippines, will have proven futile.

PHILIPPINE GOVERNMENT WANTS ONLY LEGITIMATE ENTERPRISE

In his refusal to grant The Philippine Plantation Co. a license to do business in the Philippine Islands for the reason that he was not satisfied as to the fair dealing of the company, the Hon. W. Cameron Forbes, Secretary of Commerce and Police for the Philippine Islands, went on record as opposed to the encouragement of any enterprise that could not survive the closest scrutiny, and especially an enterprise that has to do with the development of any Philippine industry.

His refusal to grant a license to the Philippine Plantation Co. was based on representations made by Messrs. A. L. Wisner & Co. of New York, acting as agents of the company in the sale of stock, in pamphlets put in circulation, and which the Secretary of Commerce and Police declares were misleading. These pamphlets announced as profits, for the purpose of attracting capital, an anticipated dividend of 40%. They were issued over a year ago and there is no indication of any dividend being declared, from earnings, up to the present time. This apparent desire on the part of the agents of the company to mislead the public as to actual conditions in order to sell the stock and the fact that the company had not forced withdrawal of the pamphlets nor otherwise condemned the methods of its agents, impressed Mr. Forbes that on the question of fair dealing alone, he could not authorize the granting of a license.

This attitude on the part of the Philippine government should have the effect of inspiring confidence in Philippine investments and discourage wild cat schemes that tend to discourage even the legitimate.

So far as can be learned, the territory to which the Philippine Plantation Co. claims title is one of the most fertile agricultural districts in the islands and with good management the very best results could be obtained in the cultivation of tobacco. A plantation company meeting the requirements of the Philippine Corporation Law could no doubt reap dividends sufficiently large to satisfy the most sanguine investor, and it is to be hopedt hat a reorganization of the company will be effected so that no doubt may be cast as to the legitimacy of the enterprise and the fair dealing of its promoters. In his report to Governor-General Smith Secretary Forbes writes:

"I have the honor to inform you that I have notified the Philippine Plantation Company that I would not approve their application for a license to transact business in the Philippine Islands on the ground that the company has been guilty of unfair dealing in their relations with the public and in the representations which they have made to induce people to subscribe for their stock. Section 68 of Act 1459, THE CORPORATION LAW, empowers the Secretary of Commerce and Police to refuse a license to a foreign corporation when not satisfied of its fair dealing and solvency. In this case I am not satisfied as to the fair dealing of this company."

Commenting further on the status, history and methods of the company, Mr. Forbes says:

"The Philippine Plantation Company acquired what they believed to be a title to some 43,000 acres of land known as the Hacienda de Calabbaco, near Tuguegarao in the Province of Cagayan, from parties who had purchased the land from one Maguigad, both by a contract of sale and at a delinquent tax sale. This title has recently been attacked in court by parties claiming through alleged co-heirs of Maguigad. The property has not been registered under the Land Registration Act.

"In answer to an inquiry from the undersigned, the Attorney-General rendered an opinion that a foreign corporation organized for agricultural purposes was prohibited by the Act of Congress approved July 1, 1902, and Act 1459 of the Philippine Commission, from holding and cultivating more than 1024 hectares of land.

"The company was organized with a capital of ten million dollars, divided into ten million shares of one dollar each. The probable object in making the par value of the shares so small was to induce people who had but one dollar or small multiples thereof to purchase their stock. This stock was offered for sale, according to the circular, at thirty five cents and I have reason to believe it has been sold at a greater discount. The fiscal agents of the Company, A. L. Wisner and Company, of New York, can not be ranked as the most conservative of banking houses nor have the enterprises which they have financed been always of the most conservative type.

"The circulars which were published by A. L. Wisner and Company in the United States make representations which are calculated to mislead, both in regard to the area cultivated and the character of the work accomplished, and also as to the probable profits, which they represent as four million dollars United States currency a year, or forty per cent of the par value of the stock. While small acreages of land in Hawaii, and possibly other places, have been coaxed into yielding profits which if extended over the whole of the 43,000 acres claimed by the Company would undoubtedly yield a profit of that sort, there is no parallel to such profits in the Philippine Islands and there is nothing that I have been able to learn of the prospects of the company which would lead me to believe they are justified in sending out any such estimates.

"The company purports to have paid one dividend to date. I have information that this could not have been done out of the profits from the cultivation of this land in Cagayan; a fact that would seem to indicate that it was paid out of the money received from the sale of securities. This lends color to the belief that the whole enterprise is one designed to induce credulous people to give up their money, and not one which will redound to the credit of the company or to the Government which allows enterprises of this kind to use its laws to fulfil their purposes."

COMPLETION OF THE KALLANG TUNNEL

After four years of continued effort on the part of the contractor, the Kallang Tunnel at Singapore, which taps the upper waters of the Kallang river and carries it to the impounding reservoir, has been carried to a satisfactory completion and Contractor W. Palliser is the recipient of much praise from the residents of Singapore for the manner in which he overcame every difficulty in this most discouraging undertaking.

The entire length of the tunnel is about 1,500 feet, and its diameter, six feet. The maximum flow is about ten million gallons a day, and in view of the construction of the proposed new reservoir, this source of water supply will be warmly welcomed by the people of Singapore at this time.

The tunnel is divided into three sections. The open work cut is followed by a section of brick work, and the last section is of cast iron construction. Many engineering difficulties were developed as the work progressed and plan after plan had to be abandoned in view of the peculiar and changing character of the ground through which the tunnel was projected. Of this the *Singapore Free Press* says:

"The work of making this tunnel gives one an idea of what engineering difficulties may be met and successfully overcome by perseverance. The beginning was the open cut, and after that system had to be abandoned came the tunnelling with wooden propping and building in a brick tunnel. When this began to sink the system had to be abandoned and the shield was sent for from home. This worked for a time with the cast iron lining, but then it was found that this even was not sufficient and compressed air had to be used. The strength varied from one to two atmospheres, being at most 25 lb. to the sq. foot, and at least about 17 lb. to the sq. foot. This system was successful but as indicating the nature of the soil it may be said that in the iron lining are plug holes which are used to work through for grouting outside but in the soil encountered there was no possibility of grouting, for if once a plug were removed, the stuff came spurting through.

"Beginning the cutting in alluvial deposit, the workmen found embedded far in tree trunks and all sorts of queer things, and emerging from the alluvial they came to kaolin and next to disintegrated granite, that is uncemented granite, and finally in the heart of the hill to granite pure. Emerging from this much the same series of grounds was met on the farther side. The greatest difficulty was met with in the disintegrated granite. This was stuff which stood stiff enough till one started to work on it and it got wet, then it simply slid away like a quick sand and it was in this stuff that the disastrous accident occurred in which five coolies lost their lives through being buried under the fallen earth."

GERMAN SHIPPING SUBSIDIES

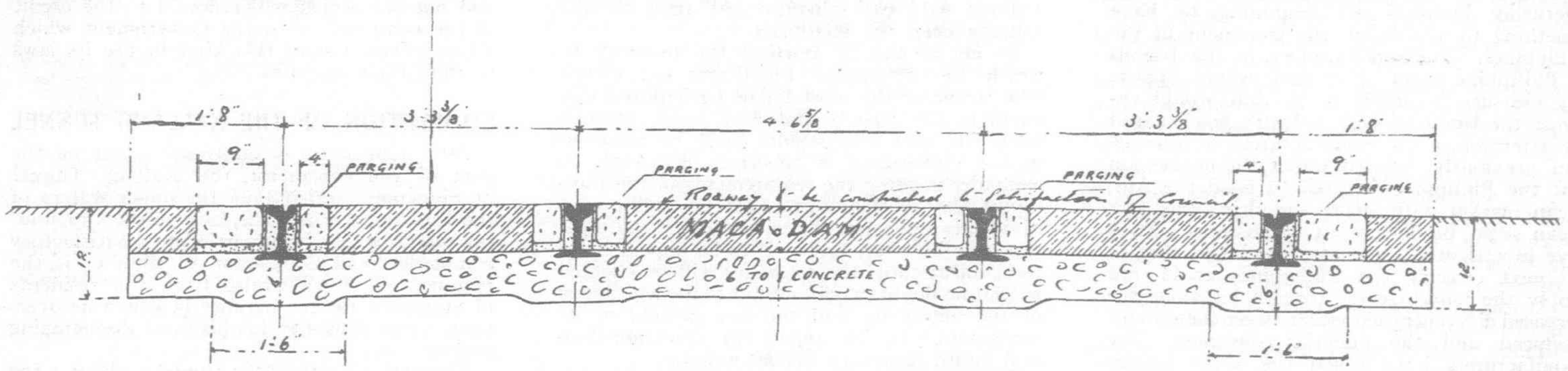
The German government has issued a statement covering the traffic on subsidized steamers for the year 1905.

On the lines to East Asia and Australia, says a Hamburg correspondent of an exchange, total goods traffic amounted to 311,173 tons valued at m.343,870,000, against 300,449 tons valued at m.357,820,000 in 1904. There is only an increase to report for the outgoing steamers; the homeward bound ships carried 772 tons less. The amount of imports was in 1905 m.29,748,000 less than in 1904, while the value of exports increased by m.15,807,000 The passenger traffic amounted on the East Asiatic line to 19,290 persons, against 23,269 in 1904, and on the Australian line to 11,279 persons against 10,882 in 1904.

SHANGHAI TRAMWAYS

(Continued from page 97)

The car shed is situated at the far end of the Bubbling Well Road, and will provide accommodation for 70 cars, with the usual repair shops and offices.



DOUBLE TRACK ROADBED CONSTRUCTION, SHANGHAI TRAMWAYS

The cars are to be of the single deck pattern divided into two compartments to seat 8 first-class passengers and 22 second-class passengers.

The bodies will rest on single trucks having a 6 feet 6 inches wheel base, and each car will be fitted with two twenty-five horse power Bruce Peebles standard traction motors.

The controllers of the same company's manufacture will have series parallel control of the two motors, and will be fitted with four series four parallel, and six brake notches.

BATTERY FOUNDATIONS OF THE KUK-SAN-DONG MILL, KOREA

In the spring of 1905 this company, the Oriental Consolidated Mining Co. of Korea, began the erection of a 20-stamp addition to the 20-stamp mill at Kuk-San-Dong camp, installing concrete mortar piers and battery foundations. These were of a somewhat unusual type, owing to the local conditions, the most important of which is the distance from a base of supplies and a large foundry.

The machinery had been ordered by cable to be a duplicate of the twenty stamps in operation, and to have heavy mortars for concrete piers. The mortars supplied, pattern No. 48, United Iron Works, of San Francisco, were designed for vertical anchor bolts 1¾ in. diam., the base being 36 in. wide by 56 in. long, and the weight, with liners, about 7,300 lb. The mortar was to rest on a ¼-in. rubber blanket placed directly on the concrete pier, and the anchor bolts were to extend vertically downward 5 to 6 in. through 2-in. tubes to a pocket washer 8 in. square bedded in the pier, there being four anchors on each side. Foot-plates for battery posts were not sent, the manufacturers having designed a post extending below the top of the mortar pier to an 18-in. streak-sill resting on a shoulder of concrete, as shown in the front elevation.

In view of the fact that a well placed concrete foundation has no limit of life, it was considered expedient to so design all iron and wood-work in connection with the concrete piers that long interruptions, or the destruction and replacement of any part of the concrete-work as the result of breakage, would be unnecessary. To this end the vertical anchor-bolt holes in the mortars were chipped out, the bolts welded out to 7 ft. 11 in., and set diagonally, slipping in a casing; the pocket washers furnished by the manufacturers fitted at the lower end against a straining block set in an easily accessible pocket, and angle washers made at the camp with double nuts at the upper end. The piers were enlarged from designs furnished to 6 ft. at the top by 12 ft. at the bottom against 4 by 8 ft., and the shoulder carrying the streaksill was lowered to 5 ft. 3 in. from the mortar-base.

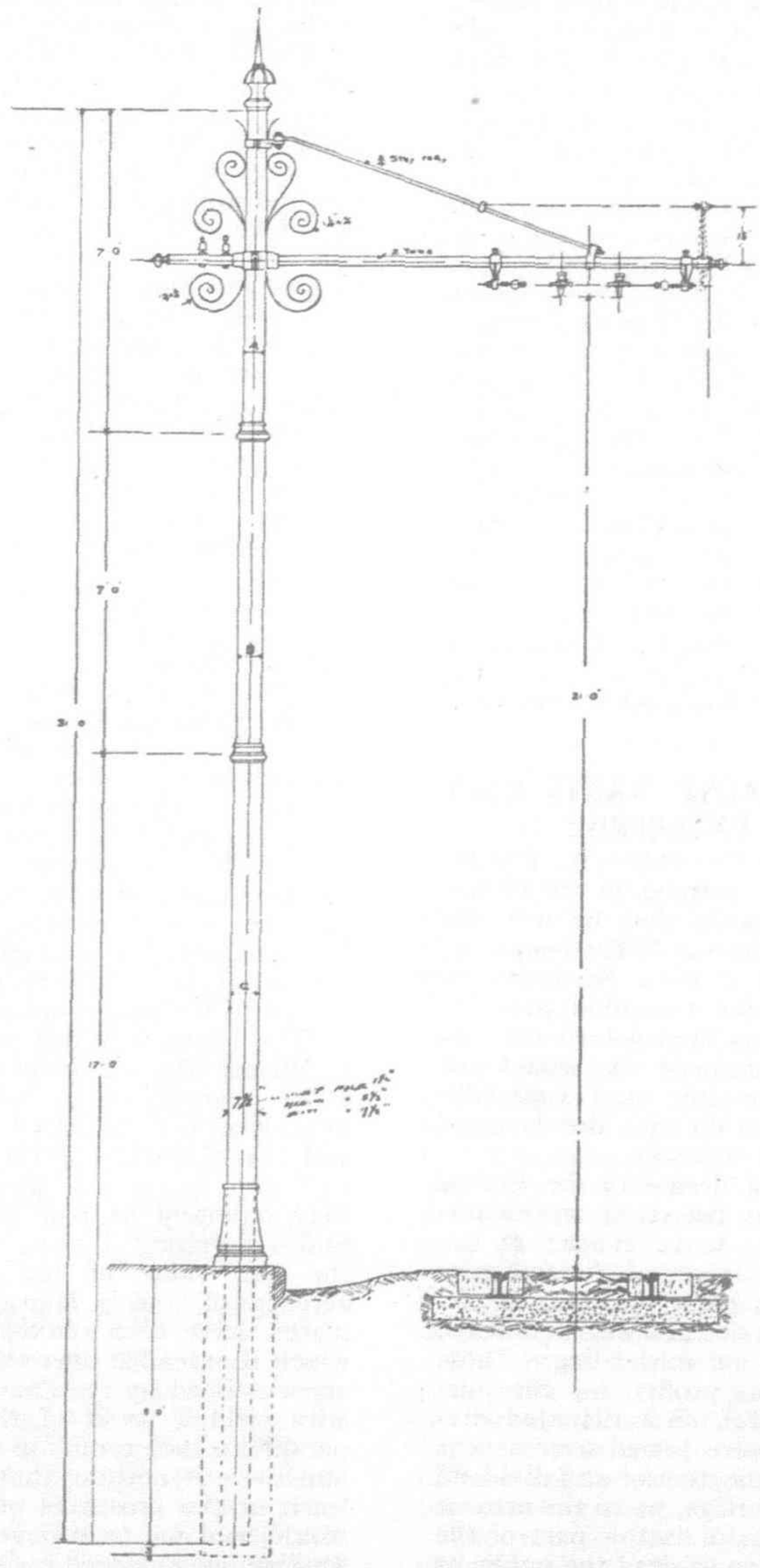
The materials for concrete were carefully selected; the stone was a hard grano-diorite from the mine-dump put through a Blake crusher set at 1½ in., and was washed free of clay by a hose under pressure. The sand was ordinary river sand, granitic in character. The cement was the best grade of Portland. An excess of water was avoided in mixing, and care was taken in tamping to insure a high density for the finished pier. The surface was left uneven over night, and when finally brought to the finished height was not capped with neat cement, but completed with the rough concrete. The piers were then seasoned for three months. The proportions used were as follows:

First portion	1 cement	1 sand	5 stone	for 3 ft.	
Second "	1 "	1 "	4 "	" 2 ft.	6 in.
Third "	1 "	1 "	3 "	" 2 ft.	

In my opinion this last mixture was richer in cement than was necessary, the 1—1—4 mixture containing sufficient mortar to fill all voids on the 1½-in. run of crusher-rock used.

This mill has been in continuous operation for fifteen months, and has developed only one fault; the anchor-bolts in the streak-sills and battery posts were not heavy enough, and have been replaced by 1½-in. bolts sulphured into the concrete, two bolts being put in the front portion of the streak-sill where there was formerly one. The accompanying sketch shows the changes suggested to remedy the weakness mentioned. The concrete-work has developed no signs of cracking or scaling, and will undoubtedly last many years.

The crushing capacity of the new 20 stamps has amounted to 1.3 tons per stamp-day more than that of the original 20 on wooden blocks, all other conditions remaining the same, over a period of nine months. The breakage of battery parts has been slightly less than in the original mill, and had been so small as to be a negligible quantity. The estimated cost of installing these batteries is



TROLLEY WIRE INSTALLATION—STEEL POLES—SHANGHAI TRAMWAY SYSTEM

about the same as that of a battery with wooden mortar-blocks and the usual type of foundations, amounting to $1,500 per stamp for the completed mill.—*Mining and Scientific Press.*

BEET SUGAR PRODUCTION

Considerably more than one-half of the world's sugar is now produced from beets. The percentage which beets supplied of the world's sugar product was in 1840 but 4.3 per cent; in 1850, 14.3 per cent; in 1860, 20.4 percent; in 1870, 34 4 per cent; in 1880, 43.1 per cent, and in 1890, 63.7 per cent, while 1900 showed for beets the highest proportion in the world's production of sugar—67.7 per cent. Of the United States production, aggregating approximately 1,300,000,000 pounds, a little over one-half was produced from beets, the year 1906 having been the first in the history of the country in which the domestic production of beet sugar exceeded that produced from cane, the figures of 1906, as supplied by the Bureau of Statistics, being: Beet sugar, 673,000,000, and cane sugar 600,000,000.

COMMUNICATED

EDITOR THE FAR EASTERN REVIEW

Dear Sir:

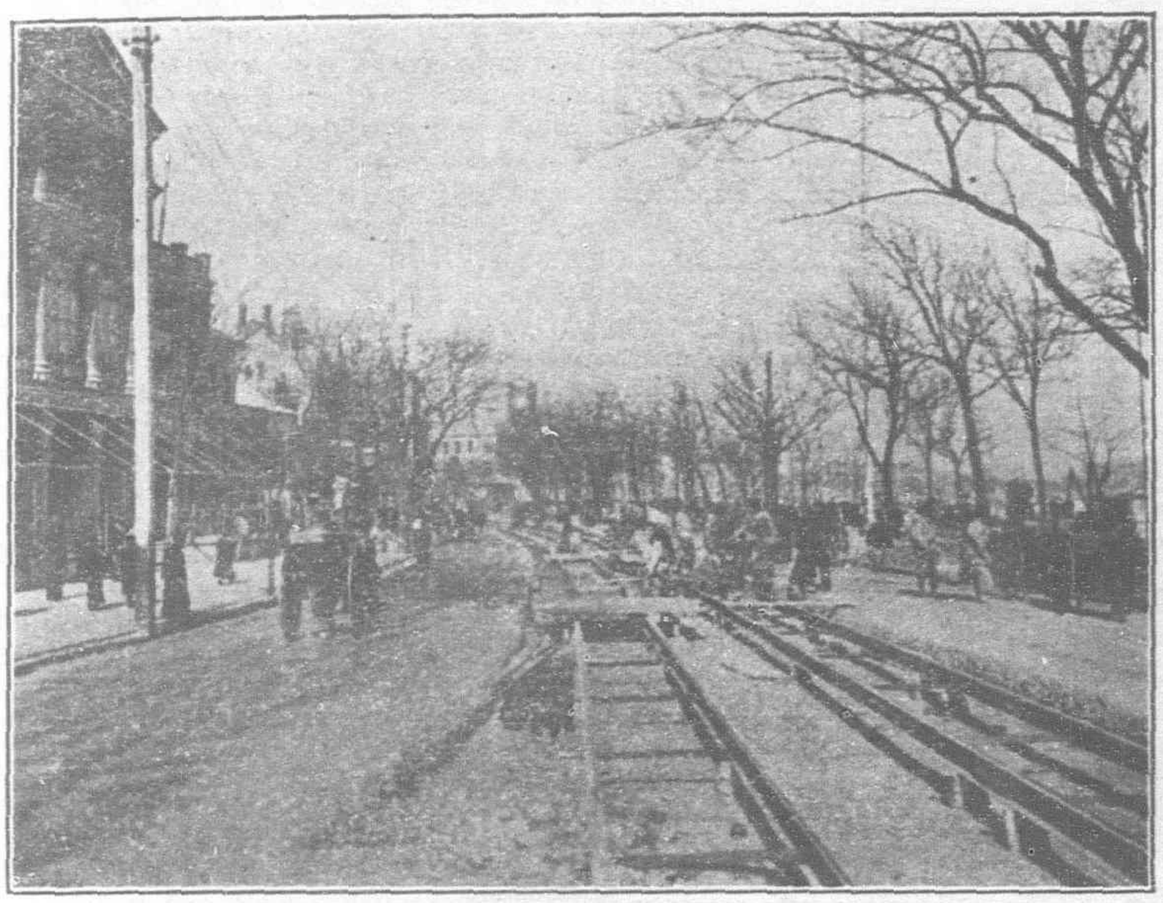
I have read with a good deal of interest the articles on "Sabang Bay" in the March number of your Review.

There are several inaccuracies in it. That it is a fine harbor goes without saying, the wharves are very fine also; but they do not find it easy to keep a good supply of coolies, there being little or no attraction or amusements for them; otherwise I don't think they would have gone to the expense of erecting those transporters. At times there is a fair amount of delay; there was a case in point but a month ago, a mail boat of the Nederland Steamship Co., a Paket-vaart boat, and one of the Chinese owned steamers were there together. The mail boat was bunkering; the Chinese boat which arrived at 1.50 p. m. required 50 tons bunkers. I cannot say if the Paketvaart required coal also. Anyhow the Chinese boat had to wait till 6.30 when the mail had finished, there not being enough coolies to go round. One can hardly call that despatch. Their transhipment cargo is but a case of robbing Peter to pay Paul, as before Sabang existed all the tobacco used to go to Batavia—same with import cargo—it used to be transhipped at Batavia—so that Batavia is the loser, not Singapore or Penang, as they get the tobacco they always did. And as regard the pepper trade of Acheen—well, that is practically a dead letter, what there is of it still goes to Penang, but it is dying. The Paketvaart have had to take their local boat off, the Chinese are going to take one off, the branch of the Netherlands Bank at Lho Samoi has to close for want of business; that does not look healthy. That Sabang will go ahead I admit, but slowly, and only as a coaling station, but it will be interesting to see the returns for 1907 when they have not the Russo Jap war to help them along.

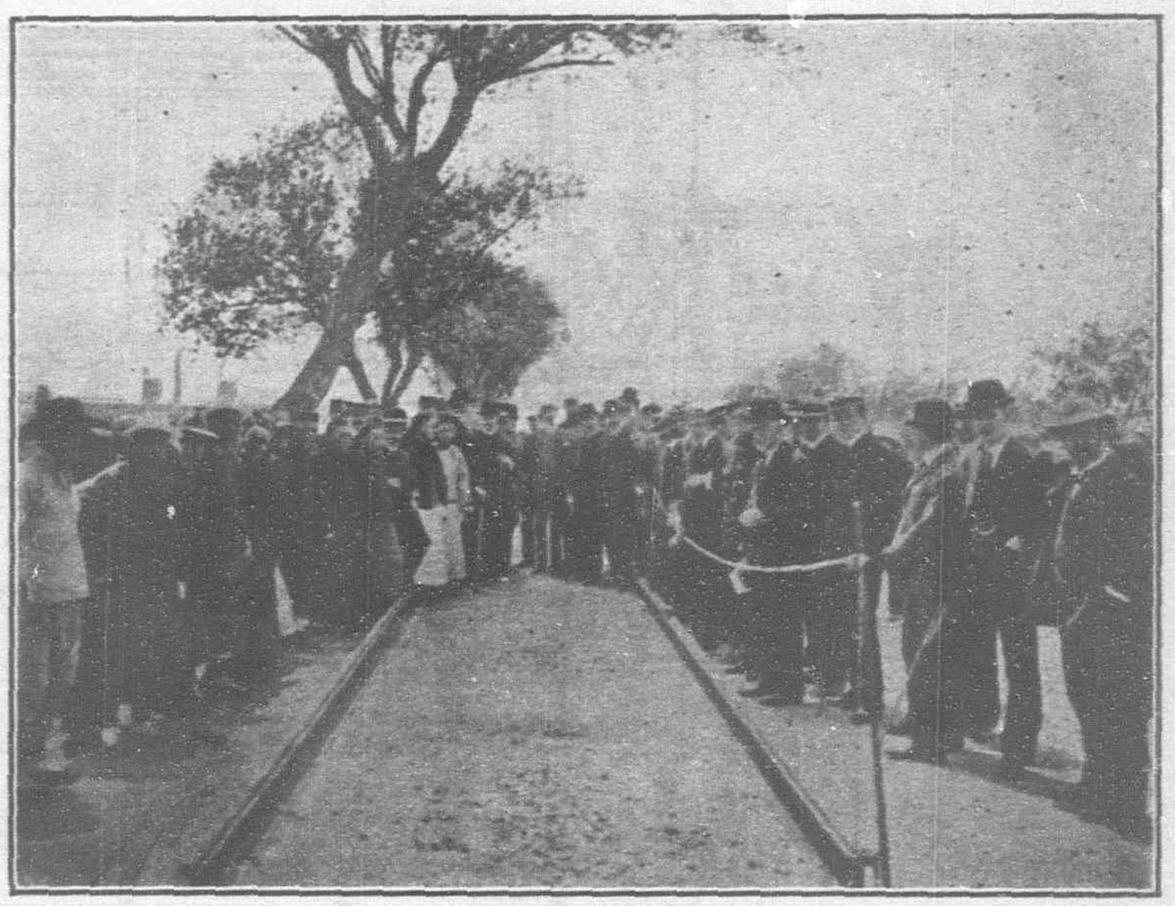
Yours Truly

ONE WHO KNOWS

Pinang, April 3, 1907.



THE BUND, SHANGHAI, OPPOSITE THE SHANGHAI CLUB



CEREMONIES AT INAUGURATION OF TRAMWAY CONSTRUCTION

PUKET TIN MINES

The correspondent of the Singapore *Free Press* writing from Western Siam devotes some space to the development of the island of Puket lying in the vicinity of the west coast of Western Siam. This island is indicated on the map under the name of Junk-Ceylon and is about the size of the city of Singapore. The correspondent writes:

"Puket is rich in tin, and there are numerous mines worked by Hokien Chinese. The population consists mainly of Hokien coolies, Siamese and a few Malays *(orang laut)*. The town of Puket, if a collection of insanitary attap hovels can be so described, lies in an amphitheatre surrounded by jungle covered hills. A trigonometrical survey is at present being actively carried on with a view to laying out roads to connect Tongkah with Burmah at Renong. A few bungalows for the Europeans of the mines department are being completed at the foot of the hills some distance from the "town."

ONLY A MINING CAMP

"But for the tin found in the island, Tongkah would be only a small fishing village and would never be heard of, or anything ever known about it. As it is, very few Europeans in Singapore or Penang know where Tongkah is.

"It is understood that a concession has been granted to an Australian or New Zealand syndicate to dredge for tin in the harbor, provided that they make a dock twenty-five feet deep and keep a good depth of water in the harbor for twenty-five years. It is also proposed to improve the mining conditions, and there is a suggestion of using the sea water to wash tin ore, owing to the scarcity of fresh water in Puket. It is further intended to put up a plant to utilize the sea water for flushing the drains and assisting in removal of sewage. The climatic conditions are similar to those of Burmah—six months drought and six months almost incessant rain. At the time of writing the wet season is just setting in. Puket is only a mining camp, and the 'scenery' consists mainly of mines and graves—graves with no stones to mark the spots where the bones of unfortunate Chinese miners lie, but only mounds of earth. Graves everywhere! Near the beach, among the abandoned mines and in the hills, graves."

The absence of a good water supply is responsible for the continued menace of plague, cholera, and typhoid. But this will soon be changed if Dr. S. A. McClintock, recently appointed as state surgeon and health officer, has his way. The correspondent says:

"One of the first steps he took on his arrival at Tongkah was to get an order passed to compel the notification of all deaths. A new modern hospital is to be built, and death certificates are to be granted in all cases. Every case of fever is to be reported by a Sanitary Inspector. Drains are to be constructed and houses are to be cleared away from certain insanitary sites. At present the water supply is very unsatisfactory. There are only a few shallow wells, and the stagnant water from abandoned and flooded mines is used for drinking purposes. Dr. McClintock intends to endeavor to find water in the range of hills by blasting operations. A plague isolation hospital is to be constructed by the Chinese towkays who understand the great loss to labor through the ravages of the plague. The government is to build a cholera isolation hospital. The first step in the proposed improvement of Tongkah is the adoption of measures for the health of the town, and this the new state surgeon is determined to succeed in. The apathy hitherto shown by the Siamese officials regarding the health of Puket has, it is to be hoped, now ceased, and the advice of the state surgeon should be followed in all these matters. Medical branches are to be organized at Renong, Trang and other places along the coast. The stock of medicines wants renewing. At present the state surgeon has not a single qualified assistant. His colleagues in Singapore and Penang would smile if they could see him examining eighty or ninety patients in an attap hut, prescribing for them, dispensing and dressing unaided. This is the Siamese idea of 'to administer and organise.'

IMPROVEMENTS PROMISED

"A telegraph and post office have been established, and it is to be hoped will soon be improved. The treasury and custom house require to be reorganized. The only Europeans in Puket besides the Government officials are the Straits Trading Company's representatives. Mr. Hartnell, the head of the police, is expected back in August from furlough, and he will once more endeavor to keep the police in order.

"Notwithstanding the freight war between the Straits Steamship Company and the Koe Guan Company of Penang, the passenger rates between Tongkah and Penang are exorbitant during the plague season. Although only one night at sea, a European first class (?) passenger has to pay $12 and $10 for his 'boy' on the 'kapal puteh,' as the Singapore Company's old tub is termed. It costs exactly the same to travel with a servant on a modern boat like the 'Perak' from Penang to Singapore via Port Swettenham.

"A railway from Bangkok is to be pushed on to Trang, on the mainland, about six or eight miles from Puket. Roads are to be constructed, and the high commissioner, Mr. Kaw Sim Bee, a Chinaman, is expecting a motor car shortly. The state surgeon will be supplied with a car when roads have been constructed."

MERCHANT MARINE OF JAPAN

The following report, covering the new steamship combine, the composition of the merchant marine, and the subsidies paid by the Government to aid shipbuilding and the merchant marine of Japan, is furnished by Consul General Henry B. Miller, of Yokohama:

The annual appropriation for promoting shipping and aiding lines of the merchant marine was for the fiscal year ended March 31, 1907, and for previous years $3,526,559, and for shipbuilding $399,250. This has been increased for the current fiscal year and several succeeding years by $784,136 per annum in subsidies for various lines. More than half of this increase goes to sustain old and establish new lines to China.

The great success that Japan will achieve in the expansion of her merchant marine will be in securing a strong position in the coasting and river transportation of China. She is building up all of these branch lines with such success that they will all become feeders to her main lines to Europe, Australia, America, Philippines, etc. The great interior of China can be reached by river transportation, and Japan's merchant marine is being extended, expanded, and constructed not only to command the large and small seaports, but to penetrate as far as possible into the heart of China by river service.

THE NEW STEAMSHIP COMBINE

The scheme to incorporate the Yangtze services of the four Japanese steamship companies—Nippon Yusen Kwaisha (Japan Mail Steamship Company), the Osaka Shosen Kwaisha (Osaka Mercantile Steamship Company), the Daito Steamship Company, and the Hunan Steamship Company—has matured. The capital of the new company will be $6,000,000 gold, made up as follows: Capital of the Daito Company, with 15 steam tugs and 15 lighters, $50,000; paid-up capital of the Hunan Steamship Company, with 3 steamships of a total tonnage of 3,370 tons, $375,000; Osaka Mercantile Steamship Company, with 6 steamers on the Yangtze and other property, $2,000,000; Japan Mail Steamship Company, with 2 steammers and other property, $1,500,000. The balance, $2,075,000, is offered to the public, which shows the greatest interest in the combine and will quickly subscribe for that amount.

When the shares are fully subscribed, 4 steamers of over 2,000 tons each will be built, and the services will be extended to Hongkong, Canton, Tairen (Dalny), and other north and south China ports. The name of the new company will be the Nisshin Kisen Kwaisha (Japan China Steamship Company).

A Government subsidy of about $400,000, the estimate for which is included in the budget for the coming fiscal year, now before the Diet, will be granted for five years. Subsidies are now granted to the four companies on the Yangtze service to the total amount of $250,000.

PLANS FOR SECURING FREIGHTS

It is pointed out that the business of the new company will be exploited on a different plan from that adopted by the existing companies, for whereas they, generally speaking, principally engage in the passenger service, it is intended by the new combine to make the cargo-carrying trade its chief business. At present, in connection with the local as well as the foreign services of the principal Japanese steamship companies, calls are only made at the most important ports, and it is believed by the promoters of the new steamship concern that a large volume of business can be created by their steamers calling at small ports now almost entirely neglected by the existing companies.

That one of the aims of the new undertaking is to compete severely with some of the foreign steamers trading in Far Eastern waters there can be little doubt, and the competition between the new company and the foreign shipping companies is sure to be even keener than that between it and the other Japanese concerns. The promoters of the new combine point out that rice from Siam and Rangoon, sugar from Java, phosphatic rock from the Pacific islands, etc., are all at present brought to Japan by foreign steamers, and it is such trade that the company will seek to develop and promote. They anticipate success in this direction by reason of more economical working than can be employed on foreign vessels, and also on account of the anticipated Government subsidy, by which they hope to make good any losses that may be incurred.

In Japan this new company will come next in order of tonnage to the Nippon Yusen Kwaisha (Japan Mail Steamship Company), the largest steamship company, and will be a power in shipping circles both at home and abroad.

SHIPS IN SERVICE

From investigations made by the department of communications the following figures have been obtained, showing the state of the mercantile marine of Japan at the close of the year 1906:

Tonnage classification.	Steamships.			Sailing vessels, foreign model.		
	Number.	Tonnage.		Number.	Tonnage.	
		Gross.	Registered		Gross.	Registered.
20 to 100	638	31,559	17,138	2,789	173,421	162,991
100 to 300	262	44,613	26,250	1,249	168,114	157,967
300 to 500	91	35,434	21,700	4	1,613	1,516
500 to 1,000	134	96,147	59,674	1	825	776
1,000 to 2,000	131	198,527	112,524	.....	.....	.....
2,000 to 3,000	108	263,748	170,989	1	2,287	1,413
3,000 to 4,000	42	142,490	92,160	.....	.....	.....
4,000 to 5,000	13	57,480	38,415	.....	.....	.....
5,000 to 6,000	6	31,972	19,462	.....	.....	.....
6,000 to 7,000	20	125,021	76,303	.....	.....	.....
7,000 and over	1	7,643	4,627	.....	.....	.....
Total	1446	1,034,634	639,242	4,044	346,260	224,668

In addition to the sailing vessels of foreign model given in the foregoing statement there

are 1,162 vessels of Japanese model, of a total carrying capacity of about 447,521 tons.

SHIP BUILDING ACTIVITY

One salient fact brought out by the foregoing table is the increase in the number of large steamers. Japan has now no less than twenty steamers of from 6,000 to 7,000 tons. The dockyards at Nagasaki, Kobe, and Uraga are very busy; they have 60,000 tons of vessels on the stocks, and 50,000 tons more are in prospect. That there should be such activity in building is remarkable, for the additions made to the marine during the war amounted to no less than 350,000 tons, bringing the total for steamers to a figure above 1,000,000 tons, and the result has been keen competition, so that many complaints are heard about cheap freights. The Nippon Yusen Kwaisha (Japan Steamship Company), formed by a union of shipowners other than the existing three large companies, with its capital of $10,000,000, is about to add several large vessels to its fleet, and altogether it may be expected that freights will be cheaper before they are dearer. As examples of the effect already produced by competition, it may be mentioned that whereas a ton of coal used to cost $1.25 for transportation from Moji to Yokohama, the charge fell at one time to 25 cents, and though it recently rose to 35 cents, it is only one-half the rate ruling before the late war. An agreement as to the rate among all the shipowners seems to be the only remedy to improve the situation, and much talk of such an agreement is now heard.

The Nippon Yusen Kwaisha is contemplating establishing a regular line between Japan and New York, via Suez, after the completion of the six new steamers, of 8,000 tons each, now building at the Nagasaki and Kobe shipbuilding yards.

SUBSIDIES FOR CURRENT YEAR

In the budget for the fiscal year ending March 31, 1908, the regular annual appropriation for aids and subventions for various forms and lines of the merchant marine, previously arranged and fixed, is as follows:

Line to Australia	$ 236,546
Ports of call (extension of the above)	25,000
Line to Europe	1,336,948
Seattle Line	327,015
San Francisco Line	506,940
Far-Eastern-Sea Line	265,000
Okinawa-Saki Line	4,500
Okinawa Line	2,700
Encouragement to navigation	769,002
Encouragement to shipbuilding	399,250
Deep-sea fishing fleet	53,408
Total	$3,926,309

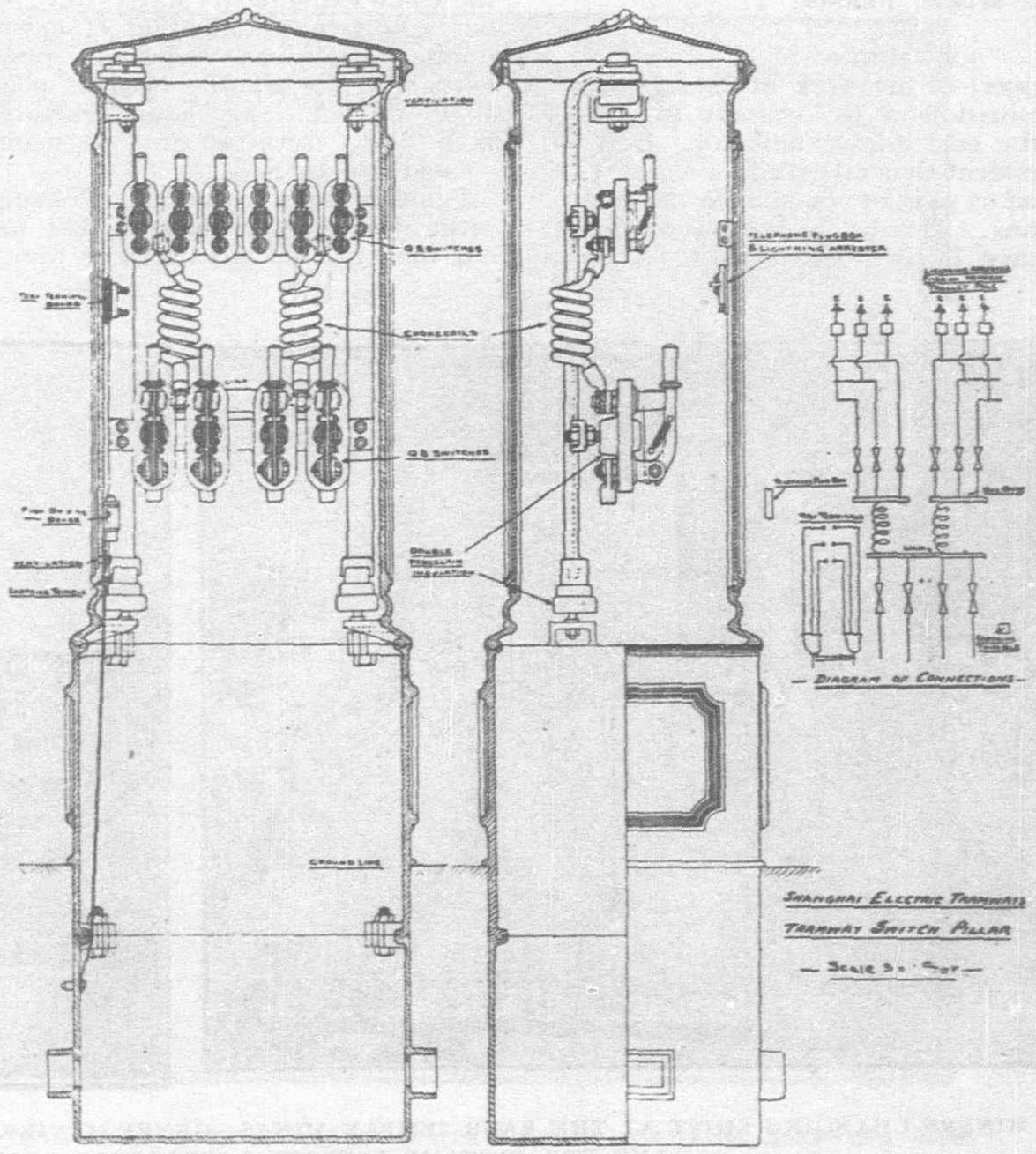
In addition to the foregoing the following aids and subventions have been recommended by the Cabinet and approved by the Diet now in session: Education of seamen, $2,500; relief of disasters at sea, $10,000; subsidy for steamship service in Chinese waters, $400,000; steamship service to Dalny, $70,000. These four amounts will be granted each year for five consecutive years beginning with the fiscal year ending March 31, 1908.

A subsidy of $99,756 a year will also be granted for four consecutive years to the steamship line to Hokkaido. And the following six subsidies will be granted for three consecutive years: Steamship line to Izu Islands, $3,780; service in Japanese waters, $175,500; service to Bonin Islands, $7,740; services in Kagoshima Ken to islands, $11,400; services among Bonin Islands, $760; service to Oki Islands, $2,700. The new aids and subsidies to the merchant marine for the fiscal year 1908 thus amount to $784,136. This, added to those previously fixed, makes the total subsidies $4,709,945.

AUSTRALIA INTERESTED IN THE HEMP INDUSTRY

Now that so much attention is given to the possibilities of the British colonies as sources of supply for cotton, ramie, and other fibrous plants, it is interesting to note the success that has attended the enterprise of New Zealand in the cultivation of hemp.

The recent development of New Zealand's great hemp industry has become the subject of much interest in Australia. The question has naturally arisen that if New Zealand has done so much in the cultivation and export of such a valuable product, why should not Australia do something in the same direction? Happily for New Zealand, the valuable plant grows anywhere and everywhere, and, unlike the thistle, burr, stinkwort, cactus, and other prolific growths in Australia, does not become a costly nuisance to the producer, but rather helps him. The New Zealand hemp industry might have achieved even greater success had the offers made by the government been accepted by anyone competent to deal with the decortication process—one upon which the ultimate success of hemp production depends.



SWITCH PILLAR SHANGHAI ELECTRIC TRAMWAYS

John Holmes of Wellington, New Zealand, has done this important industry signal service. He acted as trade commissioner in New Zealand in 1897-98. Mr. Holmes' first selection as trade commissioner was made on the petition of all the hemp mills of the colony, supported by the chamber of commerce, agricultural societies, and industrial associations.

Mr. Holmes devoted 18 months to the investigation of the fiber markets of the world, traversing England, Ireland, Scotland, America, Canada, British Columbia, and South Africa, during which he proclaimed the potentialities of New Zealand as a producing country, which he described as the "future Britain of the South." He also made known the bonus of £2,000 then offered by the government of New Zealand for the best method of dressing phormium tenax, commonly known as New Zealand flax, but recognized by the trade as New Zealand hemp.

Notwithstanding the depression which overtook the New Zealand hemp trade in 1896, which had then fallen to an annual export of 1,800 tons, and to the low price of only £10 per ton, Mr. Holmes solidly maintained that with the proper investigation of the fiber world with a view to ascertaining the requirements of oversea buyers and the adoption of a compulsory trading system, a better future would be secured, and a more profitable outlet obtained for the hemp which grows in such luxurious abundance throughout the colony over an area of 104,000 square miles.

The prophecies which Mr. Holmes made have been more than fulfilled. Trade in New Zealand hemp has continued to expand from an export of 1,800 tons in 1896 to 30,000 tons in 1906, while prices have risen in a more pronounced degree. The value of the product has steadily advanced from £10 in 1896 to £30 per ton. Mr. Holmes maintained that with proper cultivation of farm lands, also the waste lands of New Zealand, that country could profitably export 100,000 tons of fiber annually, which, at current market rates, would represent £3,000,000. This large supply would, moreover, secure a continuity of market—a desideratum of the greatest importance.

MANILA'S NEW WATER AND SEWER SYSTEM

The Philippine Commission has appropriated the sum of $2,850,000 to be expended in completing the new gravity water supply system for the capital of the archipelago and to carry on the work of sewer construction, now well under way. Up to June 30, 1907, $1,357,909.00 were expended, and it is estimated that the work accomplished represents about half necessary to complete installation.

Messrs. Matson, Lord & Belser Co. secured the contract for the construction of the dam and reservoir of the water system; Messrs. Peabody & Co. furnished the steel plates and rivets while the Atlantic, Gulf and Pacific Co. is doing the lion share of the work on the construction of the water supply and all the work on the installation of the sewer system. It is believed that the new water system will be completed by July, 1908, the date of the expiration of the time limit, and the sewer system may be completed before the time called for in the contract which is July, 1909.

GOLD AND TIN MINES OF THE FEDERATED MALAY STATES

An interesting paper on mining in the Federated Malay States by J. B. Scrivenor appears in the *Mining Journal*, which covers the progress in development to the present time and is of special interest in view of the fact that the writer is familiar with every feature of the mining industry in the different zones of activity. In this paper especial reference is made to Pahang. The article follows:

GOLD MINING

The chief object of my work in Pahang has been an examination of the country in connexion with the gold mining industry. Early in 1904 the Resident-General called for a report, to be provided as soon as possible, on the gold mines of Pahang. This led to the publication of a Preliminary Report,* dated May 14, on the Gold Mines of the Federated Malay States, in which I said that I could not pretend to have formed, in three months, an estimate of the prospects of gold mining in Pahang that could be considered final. Since then I have seen more of the gold mines and have visited numbers of localities where gold is known to occur. Moreover, I have prospected, in co-operation with the Assistant Warden of Mines, Pahang, over a considerable portion of the "Ulu" of the Dong Valley, where Malays are mining alluvial gold. The result, I regret to say, is not encouraging.

I think I am right in saying that there has been a widespread impression that Pahang contains vast stores of mineral wealth. As far as gold is concerned this has been brought about by two factors—good results in the early days of mining, and extensive native operations, past and present. Both, however, are misleading. It has not been generally realised that the early work was conducted mainly on the shallow portions of lodes, where they were affected by surface enrichment, and the fact that the Malays of to-day can work alluvial deposits, at a profit to themselves, which no white man could hope to exploit advantageously without living like a Malay, has not been set against the number and extent of native workings. The Malay buys a license for $5, he wants no machinery, a "chupak" of rice per diem and a bit of dried fish is all he needs for food, he drinks nothing but water, while a house of moderate size costs him perhaps $60. The women and children, with wooden pans, constitute the dressing plant. In one mine I visited the owner was hiring women to wash up the concentrates in the ditch. Their wages were 10 to 16 cents a day. I suppose it is the rule that Malay gold miners in Pahang have padi-fields and orchards that suffice to support them apart from gold mining.

With regard to the old workings, I am informed that there are historical grounds for believing that large quantities of gold were exported from Pahang before ever a white man set foot in the country; and it is justifiable to suppose that alluvial deposits richer than those now exploited by Malays have been worked out. But an examination of existing native mining conditions makes it evident, that, even had the deposits been as poor as those that were left for later generations, there might have survived just as many signs of ancient workings.

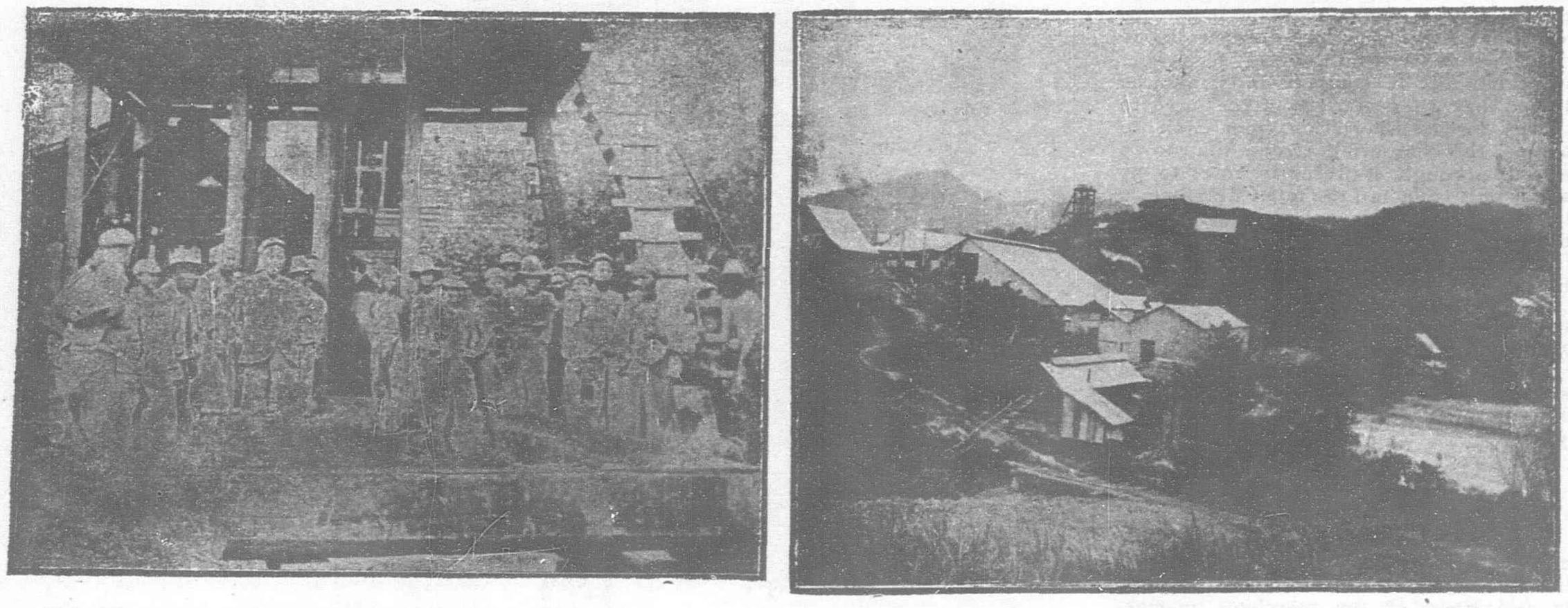
Another point concerning Pahang is that a great deal more prospecting has been carried out than is supposed by those who know only the western States, and the general verdict is disappointing. It must be granted that prospecting is difficult; and it is quite possible, even probable, that there are more lodes worth exploiting. But until the jungle is cut down to a greater extent, and until there are better communications than at present, I do not think it can be expected that capital will be expended in a search for them, seeing the results of gold mining so far; but, on the other hand, it would be impossible to advise the Government to make roads with gold mining solely in view. My hope is that when the agricultural resources of the country are developed, and the jungle cleared, more gold will be discovered in quantities worth working.

In the Preliminary Report I spoke of the Pahang gold mines as occurring on parallel lines trending N. N. W.—S. S. E., the principal line being occupied by the Raub Australian Gold Mines, Chapping and Silensing. After seeing more of the country, I do not think that this idea can be maintained. The most that can be said is that in the Peninsula there is a belt of country, extending from Mount Ophir into Kelantan, along which there appears to be more gold than on either side of it; but even in this belt the metal is so distributed that deposits payable for white men to work have proved scarce.

Gold is not confined to any one rock in the Federated Malay States; but it is interesting to note that the greater part of the underground operations have been conducted in rocks of the Raub Series and igneous rocks associated with them. Whether these igneous rocks have supplied the gold now found in veins, is a question that I think need not be discussed further here. I introduced the subject in the Preliminary Report,* and will repeat one point only—namely, that the Raub Australian Gold Mines constitute what is, apparently, a formidable objection to accepting them as the source, since, with the exception of an outcrop of quartz-porphyry near Bukit Malacca, no igneous rocks have been discovered. That there may be other igneous rocks near by, hidden in the jungle, cannot be denied.

Two interesting occurrences may be noted. In a report dated March 7, 1901, Mr. E. T. McCarthy says: "From inquiries I found that conglomerate float stones have been picked up, rich in gold; but in the vicinity of these stones a conglomerate bed in situ showed no gold." Mr. McCarthy recommended prospecting the conglomerate and sandstone. This has been done, independently, where the Telom cuts through the Bentong-Telom Range. Mr Dumaresq, who was the prospector, informs me that he found small quartz veins carrying gold, but none of sufficient extent to work.

At Gombak, in Selangor, I found pebbles of chert with radiolaria and containing abundant pyrite in microscopic grains. A sample when assayed gave 1¼ dwts. of gold per ton. Carbon, present in the chert, may account for the abundance of pyrite. In Pahang the carbonaceous shales of the Chert Series are rich in finely disseminated pyrite. I had hoped that the Gombak occurrence would lead to the discovery of some payable deposit akin to the remarkable gold ore treated by cyanidation in Sarawak. It must be confessed the inducement to prospectors is not great.



CHINESE MINERS CHANGING SHIFT AT THE RAUB SEMPAN MINES—GENERAL VIEW OF PROPERTY SHOWING NEW MAIN SHAFT ON HILLTOP AND THE 40-STAMP BATTERY LABORATORY OFFICE AND TAILINGS PIT

ALLUVIAL GOLD

It would be tedious to enumerate all the localities where alluvial gold has been or is being worked in Pahang. For the most part it occurs in very small quantities, giving no more than a color in the pan. There are, however, good patches here and there, but of such limited extent that they are rarely worth exploiting for white miners. At Tui, I am told, alluvial gold occurred in payable quantities over limestone; and I have heard that near Kuala Sat, on the Tembeling, some land was found carrying fair quantities of gold. In the latter case the transport would probably kill any but a rich mining concern. In the "Ulu" of the Chika extensive prospecting has been carried out. The result showed a few small patches of fair material in a large area

* A valuable paper in this connexion is "The Role of the Igneous Rocks in the Formation of Veins," by Mr. J. F. Kemp, in "The Genesis of Ore Deposits," published by the American Institute of Mining Engineers, New York, 1902.

of poor ground. The work in the Dong Valley gave very poor results. At Bentong gold has been found with the alluvial tin. This is the case also at Tapah, in Perak, where gold is still saved by Chinese miners.

LODE GOLD

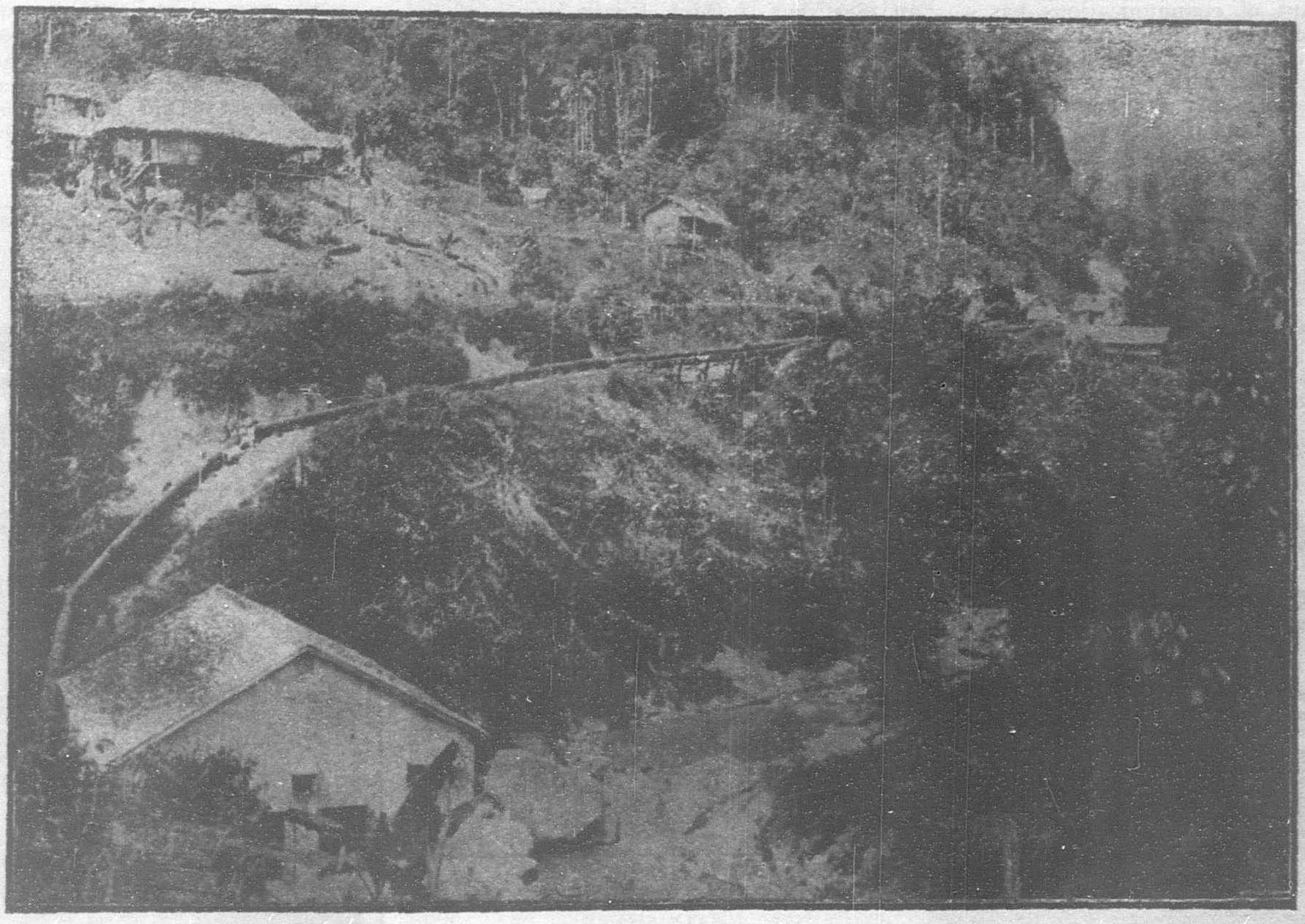
There are now only two gold mines working in the Federated Malay States, apart from native holdings, Raub and Batu Bersawah. Silensing, however, is commencing operations again. I group the various workings at Raub together as one, as they are close together and under the same management, although there are, in fact, three distinct mines—Bukit Koman, Bukit Malacca, and Stope. Batu Bersawah is a small mine in Negri Sembilan.

The Kechau Gold Fields Mines have closed down. The North Kechau lode looked, at one time, very promising. The hanging wall is hard black limestone, the footwall an intensely sheared light grey and fawn-colored rock which I now believe to be a sheared ash of the Pahang Volcanic Series. Between these clearly marked walls were masses of ore. An idea of their contents may be gathered from the fact that 1,380 tons yielded 581,503 ozs. free-milling gold, equivalent to 8.42 dwts. per ton. It proved, however, that these bodies of ore were too, few, or too far apart, for successful mining.

The Punjom Concession has ceased to exist, and after further prospecting a proposal to take up part of the original area has fallen through. It has been impossible for me to discover of what nature exactly were the operations that took place underground, for the only work I have seen in progress has been on small stringers at the surface. It is noteworthy, however, that the mullock from the Jalais shaft is largely conglomerate with a greenish tinge owing to the admixture of a rock similar to some of those of the Pahang Volcanic Series. Gold has been won by natives from conglomerate at Silensing.

Nothing more has been done at Tui, where Mr. Swan found gold in veins of quartz and veins of calcite in light grey limestone. It was here that the limestone was drilled for 953 ft. vertically. The stone was the same the whole way down. The dip cannot be observed in the present state of the mine. Working underground in the limestone was attempted, and considerable difficulties experienced on account of water and liquid mud.

In Negri Sembilan, Pasoh and Chindras are abandoned. Pasoh was interesting as being in granite country, and affording a gold-bearing granophyre. There is reason to suppose that the metal occurred originally in nests of pyrite, since Mr. J. Burns, who is acquainted with what took place there, has informed me that prospects as high as 5-6 dwts. were only obtained where there was a "vugh" or cavity.



ELECTRIC POWER GENERATING STATION AT THE RAUB GOLD MINES ON SEMPAN RIVER, PAHANG, SHOWING PIPE LINE AND PLANT WITH HOME OF ENGINEER—POWER TRANSMITTED NINE MILES TO MINES AND UTILIZED FOR ALL OPERATIONS THERE

THE RAUB AUSTRALIAN GOLD MINES

The mines worked by the Raub Australian Gold Mining Company are justly noted as a well-equipped property where low grade stone is combated by economy and efficiency. The power is chiefly supplied by electricity, generated on the Sempan River and conveyed about 6 miles over the conglomerate and sandstone hills of the Bentong-Telom Range to the mine.

But for one point, the Raub mines are of no great geological interest. The country is composed of almost vertical beds of shale and calcareous shale of the Raub Series, with occasional thin calcareous crush-conglomerates. There is no well-defined lode between marked walls, but a number of lenticular bedded veins and stringers of quartz in country. The best results are obtained from ore where there is a large admixture of country. The general trend of these veins is N.N.W.—S.S.E. Pyrite is commonly disseminated through the country, but I have not seen, or heard of, any large masses of this mineral. Calcite frequently occurs with the quartz.

The following figures, supplied by Mr. W. H. Martin, will show the grade of the stone: Year ending February 1905—Tons crushed, 60,905; gold won, 7,879.227 ozs. Year ending February 1906—Tons crushed, 69,139; gold won, 9,995.192 ozs. In 1904 Mr. C. G. Warnford Lock gave me the following figures: At Bukit Koman an average of 2½-3 dwts. per ton is a fair statement where the quartz is well developed and homogeneous. Where the ore becomes a mass of minute seams and lenticles of quartz in country 12 dwts.—1 oz. may be reached.

The one interesting point mentioned above is the occurrence of scheelite in the lode at Stope. The association of gold with scheelite is not common. It has been recorded in New Zealand, New South Wales, Piedmont, and the United States. Mr. Martin informs me that at Raub, unfortunately, the amount of scheelite is only sufficient to hinder amalgamation. It is to be regretted, however, that previous to my demonstrating the nature of this mineral it had been thrown away as useless, although unknown.

In the Preliminary Report I mentioned that an experimental shaft was being sunk at Bukit Koman to 1,500 ft. in order to prove the ore bodies in depth. Since then sinking has been suspended. With regard to the question of what would be found at 1,500 ft., I find that I have been credited with the opinion that with increasing depth there will be a decrease in value. I do not remember entertaining such an opinion, and would quote a remark of mine in the Preliminary Report, where, presupposing the existence of quartz, I wrote: "As for the problem of the richness of these quartz bodies at 1,500 ft. or more, whether in shale, sandstone, or granite, there is absolutely no means of arriving at an opinion worthy of consideration until assays of the actual stone can be made."

In the report by Mr. McCarthy quoted above "a very powerful slide or cross-course" is mentioned as cutting the ore formation at No. 4 air shaft, 613 ft. distant from the main shaft (presumably in B. Koman). I myself have seen no clearly marked faults throwing the veins; but I have seen, at B. Malacca, sudden twists in the course, owing, I believe, to the ore bodies following sharp folds in the country. In one case 1 oz. stone in some quantity was found tucked away in one of these folds. I may add that I have seen no evidence of the gold lodes being dislocated elsewhere.

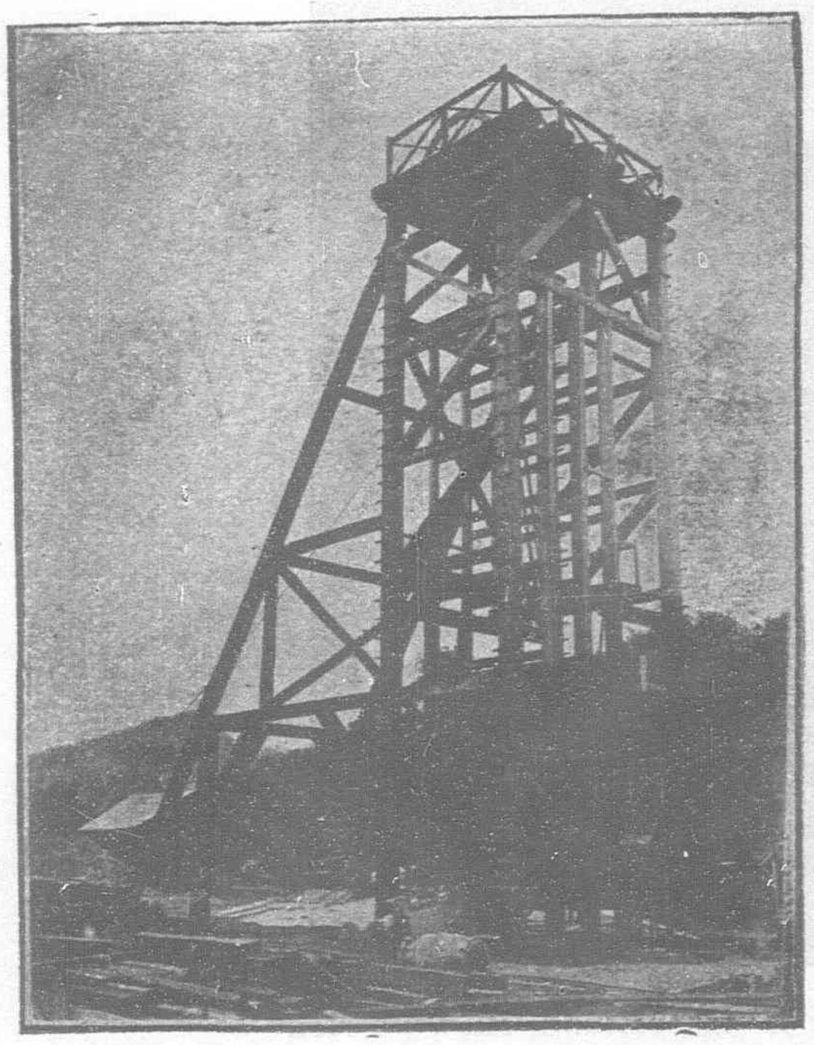
BATU BERSAWAH

Since I first visited Batu Bersawah in 1904 work has been suspended for many months pending the completion of a new shaft, sunk in diabase. Returns from this mine have been good, often reaching 13-14 dwts. per ton. The amount of stone crushed per mensem, however, has not exceeded 500 tons. The lode is near the junction of Raub Series shales

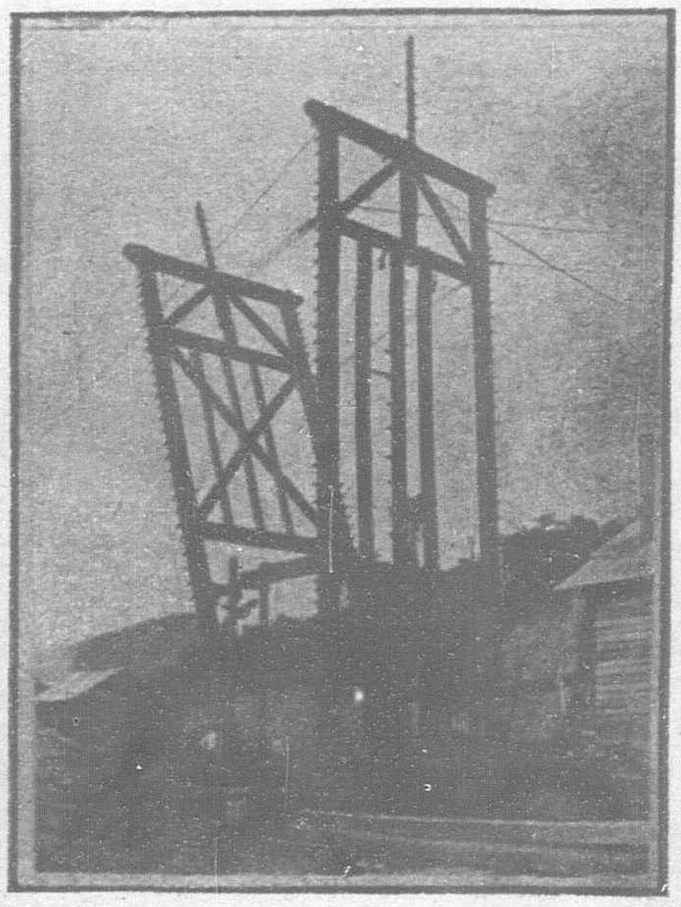
with the diabase. Its course is approximately N.N.W.—S.S.E. My latest information concerning this mine is that the results in the new level worked from the new shaft are disappointing. Further sinking may, of course, reveal more gold.

TIN MINING, PAHANG

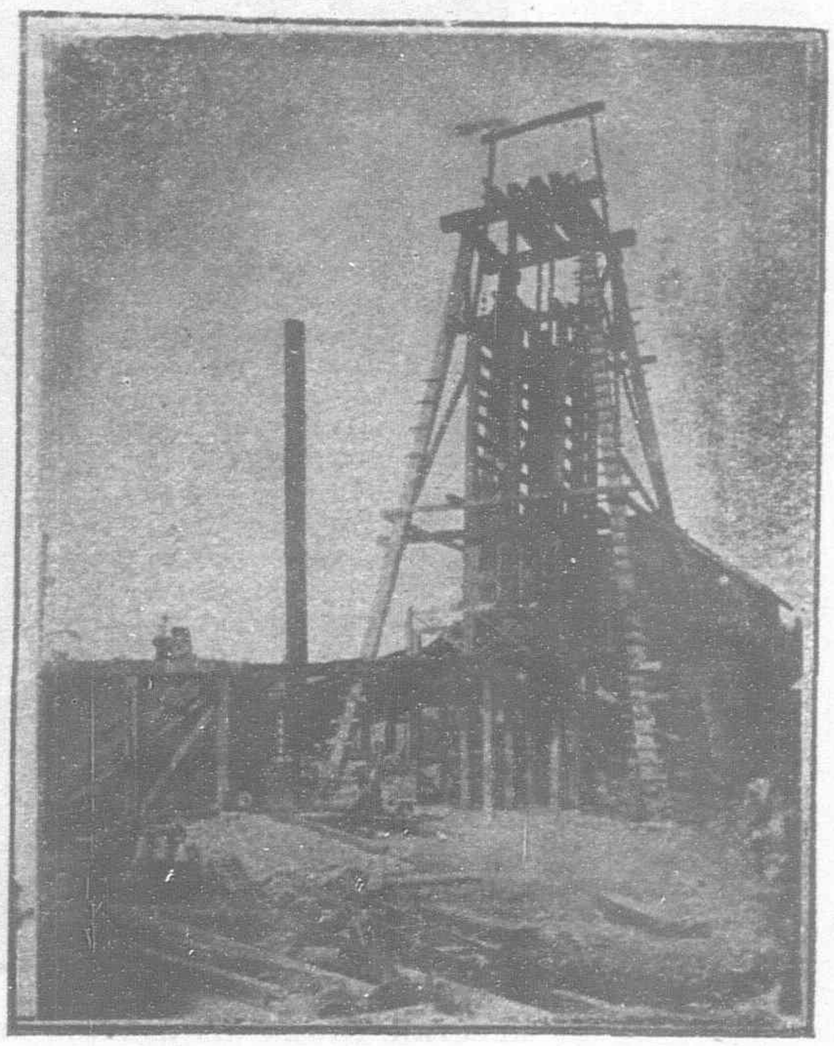
Tin mining in Pahang, although affording a small output compared with that of the western States, is by no means on the same footing as the gold-mining industry. It suffers owing to difficulties of access, which will disappear in time. That want of communications has handicapped the Machi tin field, a tin field that can only be entered by jungle tracks, is evident. Nevertheless, with one exception, I believe that investors have not complained about returns from Pahang tin mines.



HEADGEAR, RAUB MINES, COMPLETE



ERECTING SECOND PAIR OF LEGS AT NEW MAIN SHAFT



OLD MAIN SHAFT WITH ORE BINS ALONGSIDE RAILWAY

I do not claim to have done everything that there is to be done in connexion with tin mining in Pahang; it would be impossible in the time. There is, however, one general question that I may touch on—namely, the possibility of there being hidden tin fields comparable to the Kinta Valley in Perak, or Pudu in Selangor. The peculiarity of these alluvial flats that is, I think, the cause of their great wealth of tin ore, is the fact that the floor is mainly a very irregular surface of limestone where the ore, which there is no reason to suppose has been brought from a distance, has been considerably concentrated by natural means in basins and grooves. The two factors required in Pahang, then, for a repetition of these alluvial flats are an uneven limestone surface and tin ore, which we may safely say postulates granite or its modifications. The first factor is supplied in at least two cases, but on a small scale—namely, in the vicinity of Bukit Goa Sar and Bukit Goa Bama. I expect, too, that such surfaces occur under the alluvium of the Pahang River between Kuala Tembeling and Kuala Semantan, and also in the valley of the Tanum. But I cannot point to any probability of tin ore being found in considerable quantities. We know that alluvial tin ore occurs in small quantities where its source is, perhaps, not very obvious. In Kuala Lipis, for instance, tin ore has been reported. But even were granite known to exist close to the limestone, which, as touching the instances given, is only so in the possible case of the Tanum valley, it is well established that there are vast masses of granite in Pahang, differing, it is true, in some respects from the granite of the Main Range, that have afforded no payable deposits of tin ore. It may be argued that because in Bolivia and Mexico tin ore is associated with trachytes and andesites, that the Pahang Volcanic Series may afford payable deposits. It may be so, but I have no evidence tending in that direction. On the contrary, and in spite of the apparent absence of granite outcrops at Machi, there is overwhelming evidence that the tin ore in the Federated Malay States came into being with granite at a much later date than the Pahang Volcanic Series.

Another general question that has been raised is why the country on one side of the Main Range should be favored with a larger supply of tin ore than that on the other. This involves an idea that, I think I may now say, is a fallacy—namely, that the Main Range is the reservoir from which the greater part of the alluvial tin ore has been derived. Without going into the difficulties raised by an acquaintance with the rivers in the mountains, it is unnecessary to go so far as that for a source. We know that there are quantities of tin ore in granitic rocks, in schists, and in limestone, far from the central axis of the Peninsula, from which adjacent alluvial ore could be, and, I believe, was derived. In Pahang, as in Selangor, tin ore is being worked in the Main Range. On descending into Selangor, further masses of stanniferous granitic rocks are encountered. On descending into Pahang, a zone of low grade gold deposits is entered, separating the Bentong and Tras tin mines from those near the east coast. Why this should be so, we cannot possibly tell.

THE TIN LODES OF KUANTAN

Best known of all the tin mines on the east side of the Peninsula are those formerly under the management of the Pahang Corporation at Sungei Lembing, in Kuantan, and now being re-equipped by the Pahang Consolidated Company, Limited. I first visited these mines early in 1904, when an appeal had been made to the Government to assist in proving these lodes in depth. My last visit was in the latter half of 1906, when there was not so much to be seen as in 1904. Since development is being pushed on now, and I look forward to further opportunities of visiting the mines, I will reserve a general description until a later date. The workings will shortly pass into granite, and some anxiety is felt as to the behavior of the lodes. The points of resemblance between these lodes and those in the killas of Cornwall are so striking that the disappearance of the lodes on entering the granite would be surprising, seeing that in Cornwall similar lodes have been followed into the granite to great depths. It will soon be known whether this resemblance is deceptive. Copper has been exported from Sungei Lembing. It occurs with the tin ore in the lodes, and Mr. W. H. Derrick informed me in 1904 that it decreases in quantity in depth. The country is hard dark clay slate with some andalusite schist and tourmaline schist. The tin ore occurs chiefly as an impregnation in the walls of fissures.

BUNDI (KEMAMAN)

Separated from Sungei Lembing politically, but not far removed, is the Bundi Tin Mining Syndicate's property, which is only second to the Pahang Consolidated Mines for geological interest on the east coast. Originally this property was worked by the Sultan of Tringganu, but about fifty years ago he let it out on tribute to Tam Kye Chiang, who worked it open-cast to a depth of about 100 ft. from the present surface. The mine was filled up again with waste and ground the Towkay had found not worth working—largely averaging, I am informed by the manager, Mr. William Thomas, one kati per cubic yard material. Seventeen or eighteen years ago the Bundi Tin Mining Company (now the Syndicate) obtained a concession from the Sultan, including the old Chinese open-cast mine, which have been working ever since, extracting rich ore that had been left behind.*

Bundi lies at the base and to the east of a steep ridge culminating in Bukit Bundi. As I came down the River Chiroi I passed sandstone (probably weathered quartzite) at the southerly termination of this ridge, and near the settlement the base of the ridge consists of quartzite and laminated indurated shale.

The deposit, which has not been completely developed, may be described as a vast mass of clay, sandy ground, quartz, soft masses of sulphides, and hard masses of iron oxides, between walls of hard granite (non-porphyritic). The length of the deposit is 1,575 ft. The greatest known breadth is 120 ft. Judging from what is known of the walls, there is reason to suppose they form a trough. At Glen Reef only, the most northerly working, has the supposed trough been bottomed—at 80 ft. below adit. At "Anderson's" a shaft has been sunk 200 ft. in the granite on the west, and a crosscut at 150 ft. shows that the deposit has not been bottomed there. The operations from this shaft have revealed a remarkable bar of hard sulphides 40 ft. thick, with green monoclinic

* In a recently published work, "Tin Deposits of the World" ("The Mining Journal," publishers, 1905, pp. 60-61), Mr. Sydney Fawns has given an account of Bundi. I regret that my observations have not led me to the same conclusions.

pyroxene, that forms the actual junction with the soft ground. The pyroxene forms a mosaic of minute irregular grains scattered throughout the mass of sulphides.

At Glen Reef one gets a good idea of the deposit. The shaft has been sunk 90 ft. in hard granite, and a crosscut passes below the soft ore-bearing ground in the same country. Going south, on the drive at 90 ft. we pass from hard granite into soft granitic rock containing tin ore, sometimes in payable quantities. Passing on and up into the stopes, all in soft ground, we find soft bands of sulphides, iron oxides, yellowish clay, white clay with quartz, quartz, and a green chloritic rock. The ground has been mined for about 150 ft. towards the south. At 65 ft. below adit the distance from granite to granite is about 30 ft. at each end and 80 ft. in the center. No solid sulphide bars are found like that in "Anderson's," but, generally speaking, soft masses of sulphides are found near the hard granite.

In a prospecting shaft near the Old Mine shaft barren quartz, chloritic rock, grey and white clay, and quartz with sulphides were seen.

In the Old Mine shaft at 45 ft. were barren blue clay with water-worn pebbles of hard shale, quartzite, and a fine-grained granitic rock, which sometimes have an envelope of iron oxides, while the blue clay sometimes has shells of iron oxides with blue clay cores; blue clay carrying white mica and small pockets of white clay; and a soft band of sulphides. At the surface, on the east side of the ground, there is a big blow of quartz, which is, I am told, barren. Close by, however, and at some depth from the original surface, there was found a pocket of yellow clay that afforded 2 tons of tin ore. This clay carried 30-50 per cent tin dioxide. Again, above the 150-ft. level north, in "Anderson's," the Chinese miners found a rich bunch of ore in soft ground that was mined, it is believed, to within 50 ft. of the level.

The tin ore mined occurs not only in the soft clay, but also in the ironstone. It is of an unusual type, being almost always in the form of very small and slender, but sharply defined, pale yellow needles. At Glen Reef beautiful spongy masses of these crystals have been found. In one case similar ore formed a pillar standing in clay. After an examination of a considerable number of preparations, I have failed to find tourmaline or other boron minerals in Bundi specimens. Mr. Sydney Fawns, however, mentions both tourmaline and axinite. The same author mentions topaz.

Tin ore has been found in the hard granite, but not in sufficient quantities to warrant following it up far. In Glen Reef quartz and tin ore, and some sheared material with tin ore, were found in the crosscut under the deposit. In "Anderson's" the crosscut at 150 ft. follows a thin green seam. The 150-ft. level, north and south, follows a thin line of sheared granitic rock and quartz. Where the green band cuts the latter tin ore was found, and Mr. Thomas thinks that tin ore has been found in small patches all along the level. In the 200-ft. crosscut the green band was found again, and also tin ore, on which a winze was sunk for 40 ft. Among the débris at the head of the shaft is a green rock like the band in the crosscut. Sections show it contains quartz, chlorite, a colorless mineral in small irregular grains which is probably enstatite, fibrous amphibole, and cassiterite. Mr. Warnford Lock sent me a specimen like this, but containing no cassiterite. Sections of tin ore from the granite in "Anderson's" show, in some cases, the probable enstatite, but no trace of tourmaline.

When we consider that to a depth of 100 ft. and over a considerable area of the whole deposit, Chinamen have turned the ground at Bundi, and if, further, we consider the limited sections available during a visit of four days, it will readily be understood that no great confidence can be felt of arriving at a correct interpretation of the data collected. Nevertheless, I think that the preceding paragraphs and the microscopic examination of specimens in my office lead to the conclusion that we are dealing with a large mass of soft granitic rock of the nature of pegmatite, carrying rich masses of tin ore; and that the tin ore in the hard granite marks the tailing off of the rich masses where the soft pegmatitic clays pass into ordinary granite. The evidence in the Glen Reef crosscut and that of the Chinese work above the 150-ft. level in "Anderson's" strongly support the latter part of this statement. The occurrence of sheared material favors the existence of veins of ore as opposed to ore in masses, it is true but the extent of such stone is very limited. The blue clay with pebbles has not been found deeper than 90 ft., according to Mr. Thomas; and since similar clay with similar pebbles occurs in the banks of a stream hard by, it is possible that the Chinamen used it as a filling. That the ironstone in it could be formed during the period which has elapsed will not be gainsaid.

The whole deposit is usually spoken of at Bundi as a gossan, and the fact that ironstone has been found along a line stretching two miles to the south and three miles to the north has been adduced as evidence of the continuation of a lode. But, although I admit the argument may be borne out by facts, I must remark that iron stone in this country is very common. Ironstone alone does not constitute the "'iron-hat" of the German proverb.

In all essential points Bundi and Sungei Lembing at the present day agree only in being tin-mining concerns.

Before leaving this subject I would mention that Lacroix records similar ore at Hin-Boun, in the province of Cammoun, Indo-China, but not, apparently, in situ. The elongated prisms are enclosed in limonite and are not accompanied by any of the usual satellites of cassiterite. It is believed that the ore was originally in limestone.

THE MACHI TIN FIELD

This tin field lies to the south of Bentong and is not far from the Negri Sembilan border. The new road from Bentong to Kuala Pilah passes about three miles to the west of it.

Mining is carried on by Chinamen on tribute in the valleys of the Machi and the Baris. The ore is alluvial and shallow, generally about 12 ft. in depth. The pay-dirt is sandy, and there is little or no amang (black sands) to hinder dressing. The associated pebbles are of quartz, hard blue shale, and carbonaceous shale. The bedrock is of the same character. In one place two distinct beds of pay-dirt were found. The lessees are the Société des Etains de Kinta and Sheikh Abdul Raman. The tributers work open-cast and by shafting. The dressing is extremely rough, and Sheikh Abdul Raman told me that his tributers refuse to rewash the tailings. I brought a bag of tailings away with me, and found the sample contained 2.32 katis per cubic yard. The ore is angular, and varies so much in grain that, without classification, a large loss in dressing can only be expected.

(To be continued.)

AN INTERNATIONAL MONEY SYSTEM

M. René de Saussure, the eminent Genovese scientist, has recently contributed an article to the *Journal de Geneve* and to the *International Science Review* upon this subject. Speaking of the burden imposed upon all international financial relations by the diversity of money values, he strongly advocates an international system (to be used, of course, only as "monnaie de compte") as a medium of exchange without in the least interfering with the coinage of the various nations.

The point of union would be a gold piece of eight grammes—almost exactly equivalent to one pound, twenty marks, five dollars, and twenty-five francs—being in fact but one-third of a penny different from the value of a pound sterling. But for the sub-divisions the point of union must be decimally divided, and M. de Saussure would give the name of speso to a ten thousandth part of the gold coin; then a spescento (one hundred spesos) would equal twenty centimes French and a little over 2¼d English; a spesmil (one thousand spesos) would equal two shillings, two marks, half a dollar, one yen, half a peso, etc.

1 franc	396	pesos.
1 shilling	499	do.
1 dollar	2,051	do.
1 mark	489	do.
1 kroner (Austrian)	416	do.
1 rouble	1,056	do.
1 kroner (Scandinavian)	550	do.
1 florin	826	do.
1 milreis	2,217	do.
1 rupee	970	do.
1 yen	1,091	do.
1 peso	2,019	do.

IDEAL CONCRETE MACHINERY COMPANY AGAIN ENLARGES

The Ideal Concrete Machinery Co., of South Bend, Ind., have completed a deal for the purchase of the plant, business, patents, stock and good-will of the White Cement Machinery Co. of Jackson, Mich., thereby bringing into the "Ideal" family a number of machines that make the line wonderfully complete, and will doubtless result in practical control of the concrete machine industry.

The simplicity and other merits of the former "White" machines for the manufacture of cement sills, steps, side-walks and posts, have made them famous for years among concrete block makers and contractors in all parts of the United States. These features appealed particularly to the Ideal Concrete Machinery Co., realizing as they did, that the addition of the "White" machines would make the Ideal line complete, universal and invincible.

The former "White" machines will hereafter be manufactured with the Ideal machines, and will be known as the Ideal Sill, Side-walk, Step and Post Molds. The recently enlarged manufacturing capacity of the Ideal Concrete Machinery Co. places them in position to handle this increased volume of business without delay, and orders for the new Ideal machines will be filled as fast as received.

An elaborate catalogue has recently been issued by the Ideal Concrete Machinery Co., which to all intents and purposes is an encyclopedia on concrete block manufacture. It is sent free on application, and will prove interesting and valuable to builder and manufacturer alike.

PUBLIC WORKS IN NEGRI SEMBILAN

According to the annual report of the Federated Malay States for the fiscal year 1906 over one million dollars are spent in the construction of roads, streets, bridges, works and buildings. The appropriation for the year was $1,302,646 of which $1,170,324 were spent.

The Seremban water supply was completed by the end of the year, the water being distributed to many Government quarters and supplied to the town by means of dipper fountains. The water is said by the Health Officer and Bacteriologist, Kuala Lumpur, who examined it recently, to be the best he has seen in the Federated Malay States and the supply is ample. A special pipe connects the hospital reservoir with the main pipe before the latter reaches the main service reservoir.

The building of the new Residency made fair progress during the year: its completion is, however, said to have been much delayed by wet weather The new Government Office at Kuala Pilah was completed and occupied during the year. This is an excellent building. In Seremban town the work of lowering and regrading Paul Street was completed. It is now a very fine main thoroughfare. In the district the earthwork of the road to join Labu with the Sepang road, in the Selangor system, was completed. The final section in the Negri Sembilan portion of the Kuala Pilah-Bentong road was completed by the contractor as regards earthwork and bridging. The length of metalled cart-roads was increased during the year by 15 miles.

JAPAN'S SUGAR REFINERIES

The sugar-refining industry in Japan is steadily growing, the monthly output of sugar at present amounting to 250,000 piculs, of which 100,000 piculs are produced by the Dairi Sugar Refining Company, and 150,000 piculs by the Japan Sugar Refining Company. Three new refining companies—the Yokohama, Nagoya and Kobe—are expected to commence operations before the end of the year, when the total monthly output will increase to 400,000 piculs

FAR EASTERN COMPANY REPORTS

PERAK RUBBER PLANTATIONS

At the first annual meeting of this company a net profit of £1,014 was carried forward.

BALGOWNIE RUBBER ESTATES

At the general meeting of the Balgownie Rubber Estates the net profit of $10,412 for the year ending March 31 was directed carried forward to next account.

BUKIT RAJAH RUBBER CO.

A final dividend of 25% making 30% for the last fiscal year has been declared by the Bukit Rajah Rubber Co.

BANGKOK MANUFACTURING CO.

At a recent meeting of the directors of this company it was decided not to pay any dividends for the first half year, 1907.

JAVA RUBBER AND PRODUCE CO.

The first general meeting of this company was held recently and while no dividend was declared, the progress made during the year was voted highly satisfactory.

SHANGHAI AND HONGKEW WHARF CO.

The shareholders of this company have declared an interim dividend of Tls. 8 or equal to about eight and one-quarter per cent per annum.

ASTOR HOUSE HOTEL

This company declared a dividend of $3 for the year per share equivalent to eleven and one-quarter per cent per annum.

WEST POINT BUILDING CO.

An interim dividend of $2 for the half year ending June 30, 1907, was paid July 9. This sum per share is equivalent to eight and one-half per cent per annum.

HONGKONG ROPE MANUFACTURING CO.

This company has paid an interim dividend of 80 cents a share for the six months ending June 30. This is equivalent to eight and three-quarter per cent.

HONGKONG STEAM WATER-BOAT CO.

(IN LIQUIDATION)

The assets and liabilities of the company have been taken over by the Union Waterboat Co. for the sum of $127,500 to be paid to the shareholders of the old company in the form of shares in the Union Waterboat Co. The report of the liquidator was approved by the shareholders, August 9, and the affairs of the old company wound up.

YOKOHAMA ENGINE AND IRON WORKS, LTD.

A final dividend of 5% was declared by this company on July 31 making in all 15% for the year ending May 31, 1907.

THE IMPERIAL COMMERCIAL BANK

This institution has declared a dividend of 5% per annum and carried forward 23,679 yen for the half year ending June 30.

THE HYPOTHEC BANK OF JAPAN

This institution shows a net profit for the half year of 340,860 yen out of which two dividends of 5% each have been paid.

FUJI COTTON MILL CO.

A dividend of 25% per annum has been declared by the shareholders of the Fuji Cotton Mill Co. The total net profit for the year was 1,532,945 yen.

THE KANJO GINKO

A dividend of 15% was declared at the fourth semi-annual meeting of the shareholders of the Kanjo Ginko, Seoul, last month.

THE JAPANESE KEROSENE OIL CO.

The shareholders of the Japan Kerosene Oil Co. have declared a dividend of 32%.

THE NIPPON RAILWAY CO.

The shareholders of the Nippon Railway Co have declared a dividend of 11.5%.

THE TOKIO FARMERS' BANK

At the semi-annual meeting of the Tokio Farmers' and Mechanics' Bank held recently a dividend of 10% was declared.

HOKKAIDO SEIMA KAISHA

At the recent general meeting of the Hokkaido Seima Kaisha a dividend of 13% was declared and the proposal to amalgamate with the Nippon Seima Kaisha was unanimously adopted.

NIPPON RAILWAY CO.

The directors of the Nippon Railway Co. have declared a dividend of 11.5% for the last fiscal year.

THE DAI NIPPON BEER BREWERY CO.

This company has declared a dividend of 15% for the half year besides setting aside 180,000 yen as a reserve and paying its employees a bonus of 27,835 yen.

THE RUSSO-CHINESE BANK

The directors of the Russo-Chinese Bank have declared a dividend of 9% after setting aside 700,000 roubles for the reserve funds. The net profit of this institution for the year was 3,585,102 roubles.

TOKIO FERTILIZER CO.

The Tokyo Artificial Fertilizer Company declared a dividend for the first half of this year at the rate of 16 per cent per annum at a general meeting of the shareholders held on July 29. A resolution was also passed to increase the present capital of 1,500,000 yen to 3,000,000 yen.

FIRST BANK OF JAPAN

The semi annual ordinary general meeting of the shareholders of the Dai Ichi Ginko (First Bank) was held on August 2, when a dividend for the first half of this year was declared at the rate of 10 per cent per annum. The sum of 429,440 yen was carried to next account.

THE DORDT PETROLEUM CO. OF JAVA

This company has declared a dividend of 425 per cent for the year 1906 and gives some idea of the enormous profits in successful oil ventures in that section. This dividend is the highest yet recorded in the history of the company. In 1899 it paid a dividend of 418 per cent and in 1900, 408 per cent.

THE GRAND HOTEL CO., YOKOHAMA

The net profit of this company for the half year just ended amounted to 64,735 yen out of which a dividend of 6 yen was paid per share.

OSAKA CEMENT CO.

A dividend of 20% has been declared by the Osaka Cement Co. for the half year ending June 30. In addition to paying this 1 rge dividend the directors placed 70,000 yen in the reserve fund and carried forward a surplus of 17,000 yen.

STRAITS TIMES PRESS

The above company has declared a half-yearly dividend of $5 per share.

OSAKA SHOSEN KAISHA

A semi-annual dividend of 6% was declared by this company besides writing off for insurance yen 252,000; repairs, yen 411,000; depreciation, yen 291,000; reserve fund, yen 53,000; carried forward, yen 705,012,677. A large part of the net profit was realized from the sale of the company's steamers running on the Yangtsze.

SIAMESE TRAMWAY CO.

At the fifth regular meeting of this company at Bangkok a dividend of 2% for the half year ending March 31 was declared.

GODO COTTON SPINNING CO.

The shareholders of this company have declared a dividend of 30% for the year and divided 513,000 yen between the reserve and surplus out of the net profits.

BRUSEH TIN MINING CO.

A final dividend of ten per cent, making twenty per cent for the year, was recently declared by the shareholders of this company.

UNITED ASBESTOS CO.

The United Asbestos Co. has paid a dividend of 80 cents on ordinary shares and $19.80 on founders' besides adding $10,000 to the reserve.

HONGKONG, CANTON AND MACAO STEAMBOAT CO.

At the half yearly meeting a dividend of $1 was declared by the shareholders of this company which equals about 7% per annum.

BANK OF RANGOON, LTD.

A dividend of five per cent, free from income tax, has been declared by the Bank of Rangoon for the half year ending June 30, 1907.

TOKIO COTTON SPINNING CO.

An interim dividend of 20% was declared by this company for the half year ending June 30.

THE TOKIO GAS WORKS

The shareholders of the Tokio Gas Works declared a dividend of 15% for the half year ending June 30.

HONGKONG AND WHAMPOA DOCK CO. LTD.

The above company has declared a half-yearly dividend of 8% or $4.00 a share and carried forward $490,000 besides passing $100,000 to special account.

SHANGHAI TUG & LIGHTER CO. (LTD.)

The Shanghai Tug & Lighter Co. recently declared a dividend of three and one-half per cent on preferred shares and three and one-half per cent on ordinary shares for the year ending June 30, 1907.

SEEBPORE COAL CO.

The Seebpore Coal Company has a good report. The shareholders receive a dividend for the half-year at the rate of 28½ per cent per annum.

BENGAL-NAGPORE COAL CO.

The Bengal-Nagpore Coal Company have an excellent report for the first-half of this year. The shareholders receive a dividend at the rate of 40 per cent per annum.—*Railways.*

FUJI SPINNING CO.

At the general meeting of the Fuji Spinning Co. a dividend of 25% per annum was declared for the half year ending June 30, 1907. In addition to this amount, 571,645 yen were carried forward.

TIENTSIN WATER WORKS CO.

A dividend of six and one-half per cent was declared at the annual meeting of the Tientsin Water Works Co. recently.

PERAK RUBBER PLANTATIONS

No dividend was declared at the first annual meeting of the Perak Rubber Plantations Co. as only one-sixth of the estates controlled by the company was producing. The prospects for the company seem to be the best and the accounts for the year show a net credit balance of £1,014.

SHANGHAI DOCK & ENGINEERING CO.

The net profits of the Shanghai Dock and Engineering Co. (Ltd.) for the year ending April 30 amounted to Tls. 76,059.95 from which a dividend of Tls. 3 per share was declared, leaving a balance carried forward of Tls 10,459.95

THE NIPPON KOGYO GINKO

The Nippon Kogyo Ginko held its regular half-yearly meeting August 5 and the bank declared a dividend of seven and one-half per cent for the term just ended.

NEW PUBLICATIONS

THE JAPAN YEAR BOOK 1906; Published by the JAPAN YEAR BOOK OFFICE, 31 Kobiki-cho, Kuchome, Tsukiji, Tokyo. Price: Yen 3.50 or 7s net. Sole Agents for Europe: THE JAPAN PRESS, 7 Byward Street, London, E. C.

This timely publication gives in a comprehensive form a wealth of data concerning Japan, and things Japanese. The book contains some 550 pages replete with useful information invaluable to journalists and merchants. The 80 pages devoted to "Who's who in Japan" are especially interesting at this time as giving a sidelight on the careers of the men who contributed to the development of the Empire and advancement of Japanese prestige throughout the world.

Specifications for Street Roadway Pavements by S. Whinery, M. Soc. C. E.—The Engineering News Publishing Co. of New York has just issued this interesting and valuable volume from its presses. The preface to the volume has the following introduction which explains the purpose of the work:

"In addition to their value as memoranda and aids in preparing specifications for a particular project, carefully prepared general specifications, embodying the latest approved practice, sometimes supply the most useful and acceptable brief treatises upon any particular branch of engineering work. It has been partly with this thought in mind that the following set of specifications for standard street pavements has been prepared and is now offered to city engineers and municipal authorities.—Paper $0.50."

Pocket Map of the Philippine Islands, by Messrs. Kemlein & Johnson, Manila, P. I., and issued by the German-American Book Store. This publication will be found invaluable as it contains a complete railroad map of the islands including the lines in operation and the proposed routes under construction.

HONGKONG-MANILA DIRECTORY BY THE ROSENSTOCK PUBLISHING CO., MANILA, P. I.—This new publication, recently issued, has been warmly welcomed by the residents and businessmen of Hongkong and Manila. The compilation of the names and addresses of the foreign inhabitants of Hongkong in alphabetical order is an innovation in the way of a city directory there and the liberal support given is an indication of the endorsement received. The Rosenstock Publishing Co. will soon issue a Shanghai Directory from its presses. The price of the Hongkong-Manila Directory is ₱12.00 per annum.

Directory of the Engineers' Club of Philadelphia for 1907.—This neat and handsomely bound pocket directory is corrected up to May 13th, inclusive, and contains a complete list of the officers and members of one of the oldest and most important professional clubs in the United States. The president is Henry H. Quimby, with Washington Devereux and W. P. Dallett as vice-presidents and Walter Loring Webb as secretary. George T. Gwilliam is treasurer. The Engineers' Club of Philadelphia was organized in December, 1877, and incorporated in 1892.

The Philippine Journal of Science for July.—Contents: MERRILL, ELMER D.—The Flora of Mount Halcon, Mindoro; AMES, OAKES—Orchidaceæ Halconenses: An Enumeration of the Orchids Collected on or near Mount Halcon, Mindoro, chiefly by Elmer D. Merrill; BROTHERUS, V. F.—Musci Halconenses; MERRILL, ELMER D.—Index to Philippine Botanical Literature, II.

Panay and Negros Industrial Number of the Manila Daily Bulletin.—This special issue of Manila's leading commercial daily is one of the most valuable numbers to its credit in its eight years faithful service in the interests of Philippine commercial development. The number contains a resume of the history of the development of the sugar industry of the two provinces and is splendidly illustrated throughout. One of its principal features is a railroad map of the two provinces, reproduced on the cover, showing every station along the proposed route of the Philippine Railway Company.

In addition to the review of the agricultural wealth of the provinces referred to, the publication contains an interesting article on the commercial conditions of that territory from the pen of Mr. J. S. Stanley, collector of customs for Iloilo. Typographically it is a credit to the publishers. Any one desirous of first hand information in regard to the fertile provinces of the Southern isles will find it invaluable. Price ₱1.00.

THE ORIENTAL CONSOLIDATED MINING COMPANY, KOREA

The report of this New York company, which is operating gold mines in the Wunsan district, in Korea, deals with the operations in the year ended June 30, 1906. Although the Russo-Japanese war ended in October, 1905, a large amount of trouble was experienced at the mines through scarcity of competent labor and lack of transportation facilities. This resulted in a reduction in tonnage crushed in the mills of 21,230 tons as compared with the returns for the previous fiscal year. The total amount of ore mined in the company's properties was 233,157 tons valued at $1,177,487, or an average of $5 per ton. In addition to the above the mines operated on tribute, or lease agreements, produced 3260 tons of ore valued at $20,150. The average mining cost, including all underground development work done during the year, was $1.14 per ton. The operating profit was $367,882, and of this amount a sum of $140,637 was expended in new construction, leaving a net balance of $227,245. Six of the company's mines were operated during the year, and their returns were as follows: Chittabalbie produced 8946 tons of ore valued at $26,753; Tabowie produced 43,473 tons valued at $213,367; Taracol produced 91,936 tons valued at $497,954; Kuk San Dong North produced 28,146 tons valued at $142,964. Kuk San Dong South produced 23,065 tons valued at $93,660; and the Charabowie produced 37,591 tons valued at $202,788. Milling costs varied from 0.45c. per ton in the Kuk San Dong ore, to 0.80c. for the Chittabalbie. The combined operations of the Tabowie and Taracol cyanide plants resulted in the treatment of 31,611 tons valued at $395,271. The bullion return was valued at $255,518, and the percentage extraction 64.6. In order to improve the extraction a small plant was built at the Taracol mill consisting of a tube mill 24 in in diameter by 12 ft. in length, fitted with two agitators, gold tanks, zinc boxes and sump tanks. The results of experimental runs of 6-ton lots, lasting 30 hr., approximated a theoretical extraction of 93 per cent. The average extraction at the Kuk San Dong mill was 80 per cent., and a net profit of $7795 was obtained by retreating 12,529 tons taken from the old Taracol cyanide dump. The results of the experiments carried out in the various cyanide plants during the year clearly demonstrate that it is essential to regrind all the material going to the vats in order to raise the percentage of cyanide extraction.

Development in the various mines was vigorously carried out during the year. It was estimated in 1905 that the Chittabalbie mine, which, with the Charabowie, is situated on a distinct line of reef from the other mines, and lies toward the southern portions of the concession, had an ore reserve of 7600 tons, valued at $22,375, and during the period under review an additional tonnage of 1346 tons was opened up. All of this ore has now been mined and it is intended to continue to develop the reef by sinking the main shaft deeper. The ore reserves in the Tabowie mine are estimated at 465,136 tons, valued at $2,739,327. The prospects in this mine are so favorable that it has been arranged to enlarge considerably the Tabowie mill. In the Taracol mine the reserves amount to 308,758 tons, valued at $1,765,452. The vein is 16 ft. wide, and averages $10 per ton in value about 700 ft. out from the shaft on No. 2 level west. Above the No. 3 level west the ore averages $4 per ton. The main shaft has been sunk to a depth of 629 ft., and No. 5 level having been run out, it is proposed to continue sinking another 100 ft. during the present year, and developing Nos. 6 and 7 levels.

The development work in the Kuk San Dong North mine was most satisfactory and resulted in opening up by rises and cross cuts above and to the east of No. 7 tunnel over 37,000 tons of ore of an average value of $5 per ton. The ore reserves in the Chintui mine amount to 20,000 tons valued at $100,000.

During the year the company's placer ground was prospected with a Keystone traction drill. Frozen ground stopped the work in December, after 17 holes had been drilled; but work was resumed in April, 1906, and up to the end of June over 50 holes were put down. The average value of the ground thus prospected was found to be 6c. (U. S. gold) per cu. yd. About 40 of the holes were sunk near the electric power house, 5 miles south of the Tabowie camp. It does not appear that any of that ground is rich enough to yield a working profit. Beginning at the power house and extending down the valley in a southeasterly direction a distance of 4000 ft., there is a narrow channel, the width of which has not yet been determined, averaging 12c. per cu. yd. in value. At a point 5 miles lower down the river there is another channel a mile in length, which was found to average between 10 and 12c. cu. yd. The depth of the deposit runs from 9 to 23 ft., with an average depth of 16 ft. The gold is mostly found close to the bed-rock. The bed-rock is fairly soft, and the gravel is fine and free from clay, and it is possible that it would be suitable for dredging. The gravel deposits in the concession similar to the above, but which have not been prospected yet, consist of some 40 or 50 miles of river valleys varying in width from a few hundred feet to a mile. Although the early prospects are not very encouraging, the superintedent proposes to continue prospecting the grave deposits with the drill during the present year.

The Chorrie dam, which supplies the mines and mills with water and water power, was repaired, and the dam now holds over 120,000,000 cu. ft. of water. The Taracol and Tabowie camps are furnished with electrical equipments, the power for which is furnished by hydraulic turbines.

General Manager H. F. Meserve reports that local conditions due to the Russo-Japanese war, which disturbed the supplies of labor, cordwood and mining timber, and made transportation difficult, are slowly improving, and it is expected that he will be able to keep the Taracol, Tabowie and Kuk San Dong mills running steadily throughout the present year. He estimates the ore reserves at present developed in the company's properties at over $1,000,000 tons, or $5,300,000 in value.—*Engineering and Mining Journal.*

HARMONIC TELEPHONE

Fred H. Brown, of Long Beach, California, has patented a remarkable invention which he calls the harmonic telephone and which is practical as well as mystifying in its results. It is wireless. A phonograph is attached to a microphone and wires lead from this to an induction coil. From this the music of the phonograph is led to a coil of wire placed vertically and from which the vibrations are transmitted to the air. A person wearing another induction coil in his hat band or under his coat with an ordinary telephone receiver attached may wander at will in the vicinity of the transmitter and hear clearly the music of the phonograph. A person in Los Angeles can hear the music in San Francisco, the inventor asserts.

BRENNAN'S MONO-RAIL RAILWAY

When Louis Brennan completes the mono-rail car having a width of 16 feet and demonstrates to the British government that its operation is feasible, there is every prospect that there shall be a complete revolution in present day methods of transportation. The successful demonstration made by this well-known inventor with his models has created a sensation and so impressed the British government that the latter is spending $25,000 in experimental work under the direction of the inventor.

The inventor predicts that the railway car of the future will be several times wider and two or three stories higher than those at present in use. The successful operation of the Brennan car is due to the use of the gyroscope principle in maintainnig the equilibrium of each car. The illustrations accompanying this article which are from *Popular Mechanics* give a comprehensive idea of the principles involved. Of his invention Mr. Brennan says:

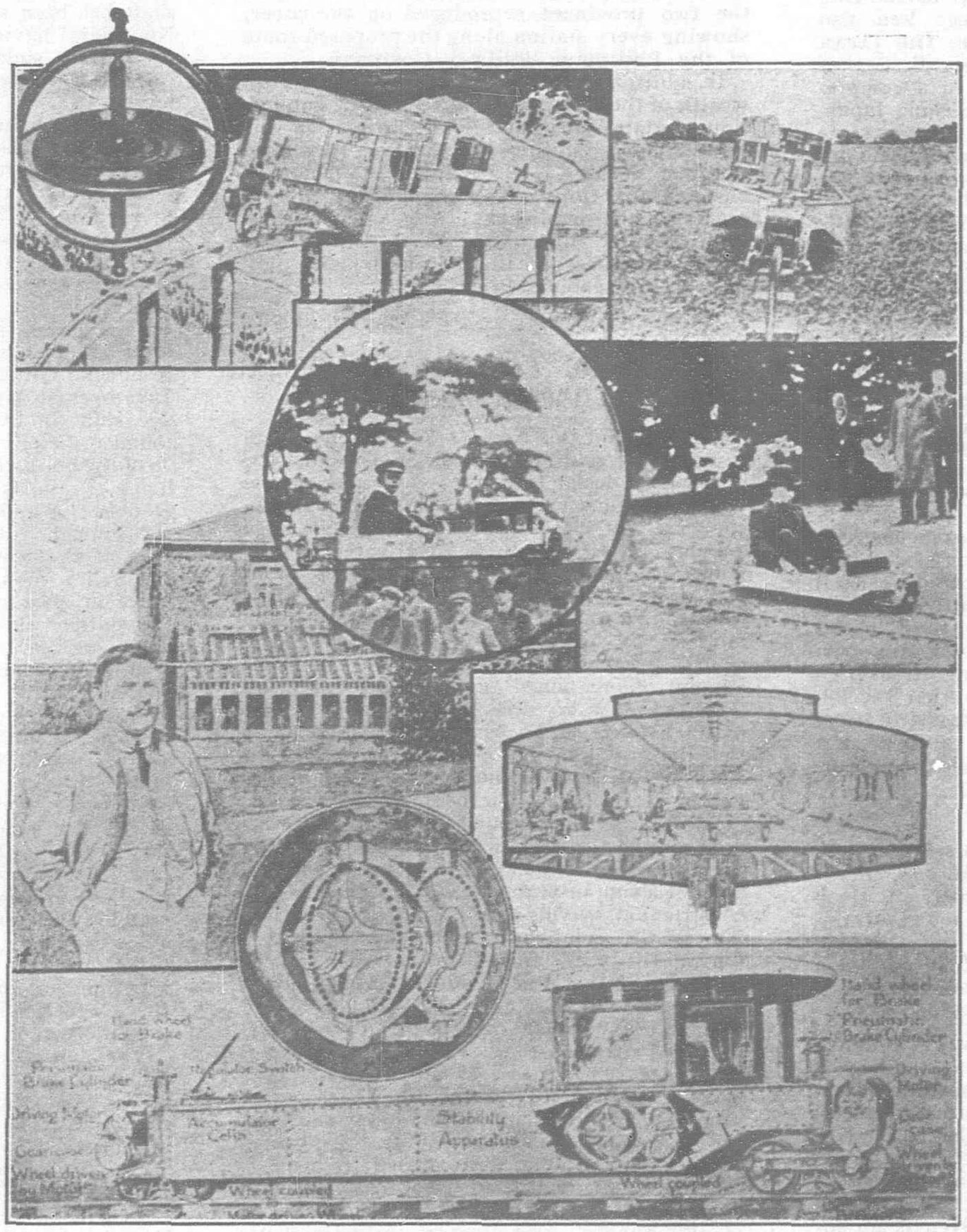
"The characteristic feature of the system of transportation is that each vehicle is capable of maintaining its balance upon an ordinary rail laid upon ties on the ground, whether it be standing still or moving in either direction at any rate of speed, notwithstanding the center of gravity is several feet above the rail and the wind pressure, a shifting load, centrifugal action, or any combination of these forces may tend to upset it.

"Automatic stability, mechanism of extreme simplicity, carried by the vehicle itself, endows it with this power. The mechanism consists essentially of two flywheels rotated directly by electric motors in opposite directions at a high velocity, mounted so that by their gyrostatic action their stored up energy can be utilized. These flywheels mounted on high-class bearings are placed in air exhausted cases, so both air and journal friction is reduced to a minimum, consequently the power required, to keep them in rapid motion is extremely small.

"The wheels are placed in a single row beneath the center of the car and are carried on bogies or compound bogies which are not only pivoted to provide for horizontal curves in the track but for vertical ones also. By this means the cars can run upon curves even of less radius than the length of the vehicle itself, or on crooked rails, or on rails laid over uneven ground without danger of derailment.

"The motive power may be either steam, petrol, oil, gas, or electricity. I use petrol (gasoline) and an electric generating set carried by the vehicle itself to supply the current to the motor's stability mechansim."

The toy top or gyroscope suggested the application of the self-balancing principle to the mono-rail car by Mr. Brennan, who has made a study of the subject for over 30 years and indeed applied it to the Brennan torpedo. It is claimed by the inventor that so long as a sufficiently high rate of revolution of the gyroscope wheels in the car is maintained it is not



1. THE ACTIVE PRINCIPLE OF THE BRENNNAN CAR: THE GYROSCOPE IN ITS SIMPLEST FORM, AS IT IS SOLD FOR A TOY—"THE TOP THAT CAN'T BE KNOCKED OVER." 2. THE VEHICLE ON THE PART OF THE TRACK REPRESENTING A MOUNTAINOUS DISTRICT, SHOWING THE WAY IN WHICH IT LEANS AUTOMATICALLY TOWARDS THE CENTER IN ROUNDING A CURVE. 3. THE VEHICLE ON LEVEL GROUND, SHOWING THE WAY IN WHICH IT LEANS AUTOMATICALLY AWAY FROM THE HEAVIER SIDE WHEN IT IS UNEVENLY LOADED. 4. THE INVENTOR AT HOME. 5. A BLONDIN FEAT: THE CAR CROSSING AN IRON HAWSER IN THE 6-FT. WORKING MODEL IN MR. BRENNAN'S GROUNDS, 5-FT. FROM THE GROUND AND KEEPING PERFECT BALANCE. 6. THE MODEL CAR CARRYING A 150-LB. MAN. 7. THE BRENNAN GYROSCOPE. 8. MR. BRENNAN'S IDEA OF TRAVEL IN THE FUTURE: A MONORAIL VEHICLE VERY MUCH LARGER AND WIDER THAN PRESENT-DAY RAILWAY CARRIAGES. 9. DETAIL OF THE CAR.

possible to upset the car. It is also claimed that it is possible to make as high as 160 miles an hour and at minimum cost for motive power. The use of the single rail saves in friction and rocking of the train alone over 50% of the energy lost in the operation of the passenger trains of the day.

Practically Mr. Brennan's gyroscope is made up of two steel wheels revolved at high speed in opposite directions, the wheels being supported on the best possible bearings and all encased in an air-tight enclosure. So perfect has the apparatus been constructed that, when the power is turned off, the wheels will revolve for forty-eight hours before coming to a dead stop. Each car must have its own balancing apparatus, 5 per cent of the total weight of the car being required for this purpose. Any power may be used to propel the train or to spin the gyroscope wheels, but a high spinning rate must be attained. With these conditions, it has been found possible to run the model trains at great speed and over all sorts of country. So long as a sufficiently high rate of revolution of the gyroscope wheels is maintained it is not possible to upset the car. The inventor claims that the sharpest curves —curves with a radius of the length of the car— may be taken at top speed without jar or jostle or vibration. More, instead of the rails being perfectly level, as are the tracks of our railroads to-day, the rail may undulate up and down.

To understand exactly how one of these cars works, glance at the accompanying illustration which shows one of the cars running across a hundred foot cable. Anywhere inside the body of the car, front or rear or middle, are a pair of fly-wheels mounted side by side and spinning in opposite directions. These wheels are run by electricity at a speed of something like 4,000 revolutions a minute. And this is all there is to the mysterious contrivance.

COTTON MILLS FOR CHIHLI

The Industrial Institute, which is a semi-official institute in Tientsin, has memorialized Viceroy Yuan, that all the districts of Chihli be instructed to establish spinning and weaving factories.

The petition points out that cotton cloth is an article of every day necessity, and the amount imported into China annually aggregates at least twenty million dollars. This represents a terrible drainage of capital out of the country. The promoters of the institute have contemplated the possibility of replacing all kinds of foreign piece goods by home manufactures, but local enterprise in this direction is handicapped by the need of proper machinery. Now the Japanese have made suitable machinery and can supply any number that may be required.

15,000 LOOMS.

The memorialists urge, therefore, that the various trading districts be instructed to take the matter up and obtain the necessary plant, the officials establishing the factories as government concerns or the merchants and people doing it independently. There are in Chihli 150 districts in which factories could be established, and with an average of 100 looms to each there would be 15,000 started at once.

One hundred pieces of cloth can be turned out by each machine, thus one million five hundred thousand pieces might be produced in a year, which will absorb one fifth of the total imports. This would afford this province an income of four million taels, and on the other hand it would save a similar amount from being poured out of the country.

NO FOREIGN ORDERS.

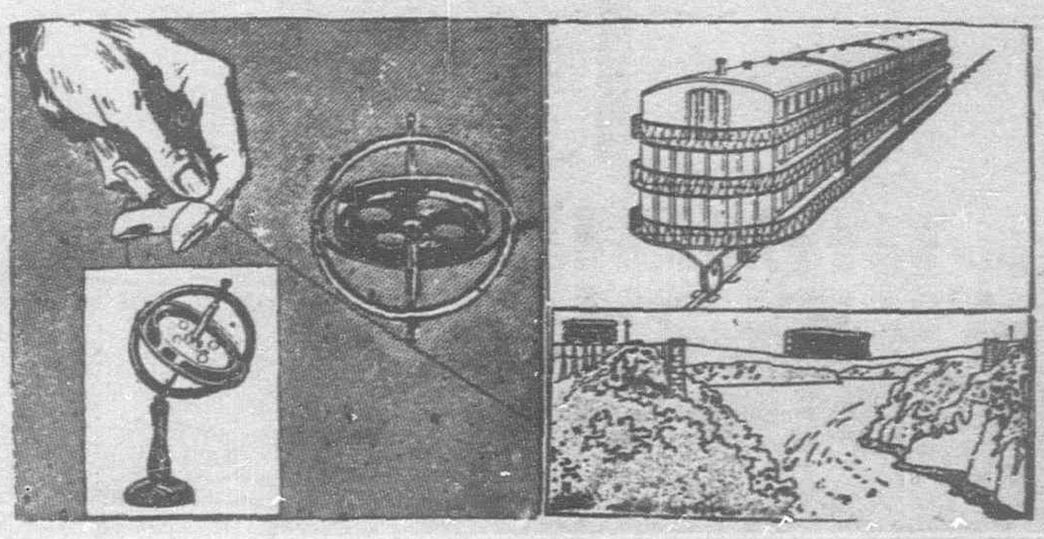
Arrangements have been made with the piece goods dealers that so soon as these factories are established orders will be placed with them instead of with foreigners, and great advantage is expected to be derived in this way. It is also urged that rewards be given to successful factories and those showing negligence be punished.

The Viceroy has approved the suggestion and steps will be taken to carry out the idea, especially, as we believe is probable, if favorable offers have come from Japan as to the setting up and superintending the proposed looms.

As was recently reported in these columns, a great impetus has been given to the Korean cotton growing trade, which would enable Japan to supply China with lower grade yarns at a cheap rate; and with Japanese spindles and Japanese instructors the path is made quite smooth for China to make a start.—*P. & T. Times.*

THE HEDJAZ RAILROAD

In 1900 the Turkish government began the building of a railroad from Damascus to the holy city of Mecca. Its total length will be about 1,120 miles, of which 440 had been built by the end of 1906, and the remaining 680 will be completed in course of time. Officially it is known as the Hedjaz Railroad, taking its name from that of the Arabian province through which it passes. For its construction no loans, foreign or domestic, have been raised. The labor for the grading is furnished by the army and the money necessary for bridge and masonry construction, superstructure, rolling stock and station building is obtained from the pious contributions of the faithful. It is an indication of the hold of the religion of Mohammed on the people, that these contributions are regularly bringing in $1,555,000 annually, and each year the road advances 60 to 100 miles. Not only does religious enthusiasm furnish funds and animate the troops employed, but it even deters the Bedouin from interfering with the work.



THE TOY GYROSCOPE—THE CAR OF THE FUTURE—CROSSING A CHASM

The road has a general southerly direction, and 300 miles south of Damascus enters the arid region. Here the difficulties of construction increase as the road advances due to the scarcity of water and the necessity of transporting everything required by man or beast either by train or caravan. These conditions continue till Medina is reached, 840 miles south of Damascus. The route follows quite closely that of the great Pilgrim road to Mecca. Indeed, the important points of the territory to be traversed were originally determined by engineers traveling as pilgrims with the holy caravan. The plan of operations is for a reconnaissance party to map out the country 90 miles ahead of the end of the road. This is followed by a locating party, whose notes are forwarded to a technical bureau with headquarters at the last large station of the already completed road, where the details of construction are worked out.

The distribution of the working parties is as follows: Three battalions of infantry, 3,000 men, are utilized for grading (earth and rock work), each man receiving an addition of 5 to 15 cents to his ordinary army pay. Contractors, mostly Italians or Austrians, construct the culverts, bridges, tunnels, buildings, etc., at stations, in short, carry out all work requiring mechanical ability. Two railroad battalions put in place a bedding of broken stone, place ties and lay rails. A company of pioneers brings up the rear, whose duty it is to finish up the roadway. For the telegraph line part of a telegraph company is detailed.

The gage of the track is 3 ft. 5½ in. At first wooden ties were used, but proving unsatisfactory in the dry and hot climate, their use was abandoned in favor of iron ties. Rails weigh 43½ lbs. and the superstructure (ties, rails and fittings) average 218 lbs. per running yard. The rolling stock consists of 43 locomotives, 522 freight and 31 passenger cars. Ordinarily it is nearly all employed for construction purposes, but at the time of the Great Pilgrimage to Mecca, it is all devoted to the transportation of pilgrims. At that season five large pilgrim trains leave daily, the large quantity of water, provisions, riding and pack animals required for the journey to Mecca having been accumulated in advance at the point of departure of the caravan.

The railroad employees, engine runners, firemen, station men and section hands are mostly natives, and they are not very satisfactory.

The engineer at the head of the enterprise is Meissner Pascha, a German officer who has had large expetience in connection with railroad work in Turkey. While at first a large number of foreign engineers were employed, these have gradually been replaced by Turkish officers and young Turkish engineers who have been trained at technical schools, so that at the present time they form the greater part of the engineering staff.—*Zeit. d. v. Deutscher Eisenbahnverw'ng.*

AMERICA'S FAR EASTERN BUREAU

With the view of placing all diplomatic and Consular matters relating to Japan and China in the hands of officials familiar with conditions in the Orient the State Department has perfected the organization of a "Far Eastern Bureau," which will have charge of all correspondence and preliminary treaty negotiations with the Oriental governments. This new departure is more or less in the nature of an experiment, which if it proves satisfactory, may lead to the organization of similar bureaus to conduct diplomatic and Consular correspondence and negotiations with the Central and South America republics and European and Asiatic countries.

Huntington Wilson, third assistant secretary of state, who for a number of years served as secretary to the American legation and embassy at Tokyo, is chief of the new bureau. His two assistants are Percival Heintzleman of Pennsylvania, formerly student interpreter attached to the American legation at Peking and later vice-deputy-consul-general at Canton and Dalny, and William Phillips of Massachusetts, formerly private secretary to Ambassador Choate at London, and for the past two years second secretary to the American legation at Peking. Phillips arrived from Peking a few days ago to enter upon his new duties.

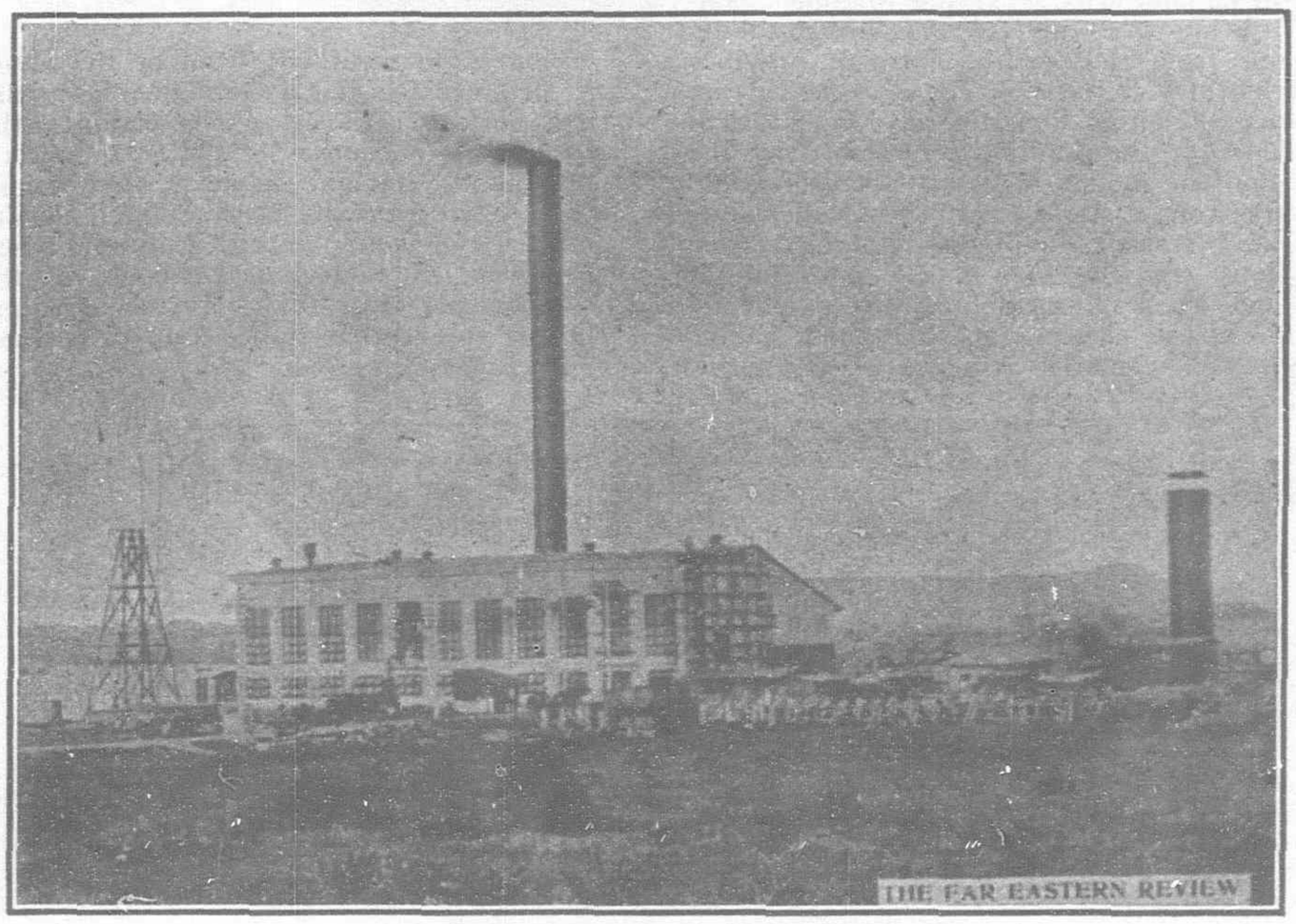
All of these young diplomats speak and read the Oriental language, are familiar with the domestic politics of the Far Eastern nations and well versed on questions of diplomacy now pending between the United States and the Oriental countries. The preliminary negotiations between this country and Japan in drafting a new treaty probably will be referred to the bureau.

Another important duty which will devolve upon the newly organized bureau will be that of considering the new positions and diplomatic notes which are annually presented to the State Department, suggesting changes in the existing treaty between the United States and China.

PASIG ELECTRIC RAILROAD EXTENSION

The Pasig Extension of the Manila Electric Railway, when completed, will cost approximately half a million gold and will tap one of the richest and most densely populated sections of Luzon besides affording ample transportation facilities to and from Fort Wm. McKinley, the largest military post in the Philippines. The line is about eight miles in length and Messrs. J. G. White & Co. are in charge of the work of construction.

The line to McKinley was opened April 18 and it is expected that the entire extension



VIEW OF THE POWER HOUSE OF THE MANILA ELECTRIC RAILROAD & LIGHT CO., CONSTRUCTED BY MESSRS. J. G. WHITE & CO., FROM WHICH THE POWER FOR THE OPERATION OF THE PASIG EXTENSION IS FURNISHED

will be thrown open to the public in a few months. The following report made by W. E. Conklin, Ass't Superintendent of Construction for Messrs. J.G. White and Co., to Mr. R. T. Laffin, Second Vice-President and General Manager of the Manila Electric Railroad and Light Co., gives some interesting details covering the physical features of the extension:

'The line consists of approximately eight miles of single track with sidings and two terminal loops—one in Pasig, the other in Fort McKinley. It extends from the Manila Electric Railroad & Light Co.'s line in Santa Ana through the Post of Fort Wm. McKinley to the city of Pasig. All of this line is on private right-of-way excepting about one-half mile along the streets of Pasig. The grading for the line is quite heavy, amounting to over 62,000 cubic yards, of which more than one-half is of rock. The maximum grade on the line is four per cent. The minimum radius of curvature—excepting for the terminal loops—is 300 feet, and this only occurs within the streets of Pasig.

"BRIDGES.—The bridge across the Pasig river consists of one channel span of 200 feet with steel trestle viaduct approaches, making the total length of the bridge about 430 feet. The bridge is divided longitudinally into two parts: one for track and the other for the highway. The channel span will have a minimum clearance above mean low water of 26½ feet. Foundations are entirely of concrete, which are carried to rock where possible, and elsewhere are supported on piles. There are three other steel bridges on the line, all plate girders averaging about 40 feet in length. All of the culverts—except small openings for which pipe of 18 inches or less diameter could be used —are concrete boxes, with reinforced roofs and concrete paving.

"TRACK CONSTRUCTION.—Crushed stone ballast is used throughout the line with a depth of eight inches under the ties. The ties are mostly of native hard woods; the rails of 70-pound "T" section. Siding switches on the private right-of-way are all standard split switches with No. 9 spring frogs. The track is bonded with two 4-0 copper terminal bonds in each joint. Block signals are provided to protect each section between turnouts. Telephones are erected at convenient points along the line for communication with the office. Neat and attractive waiting rooms are built at all important stopping places on the private right-of-way.

"POWER.—The power for operating the line is furnished by the steam generating plant of the Manila Electric Railroad & Light Co. and is transmitted to a rotary substation at 3,300 volts. From this it is carried by feeders to the trolley. Double 2-0 trolley is used throughout the line. The poles are of Ipil, one of the strongest and most durable of Philippine woods, and are all set in concrete.

"ROLLING STOCK.—For the construction of the line and the operation of freight service seven flat cars have been built; all equipped with air brakes. Three of these cars are equipped with four 75-H. P. motors each. The cars are designed to carry a live load of about 25 tons. The passenger cars are of American manufacture and are equipped with four 40-H. P. motors each, air brakes and arc headlights. The seating capacity of each car is 36."

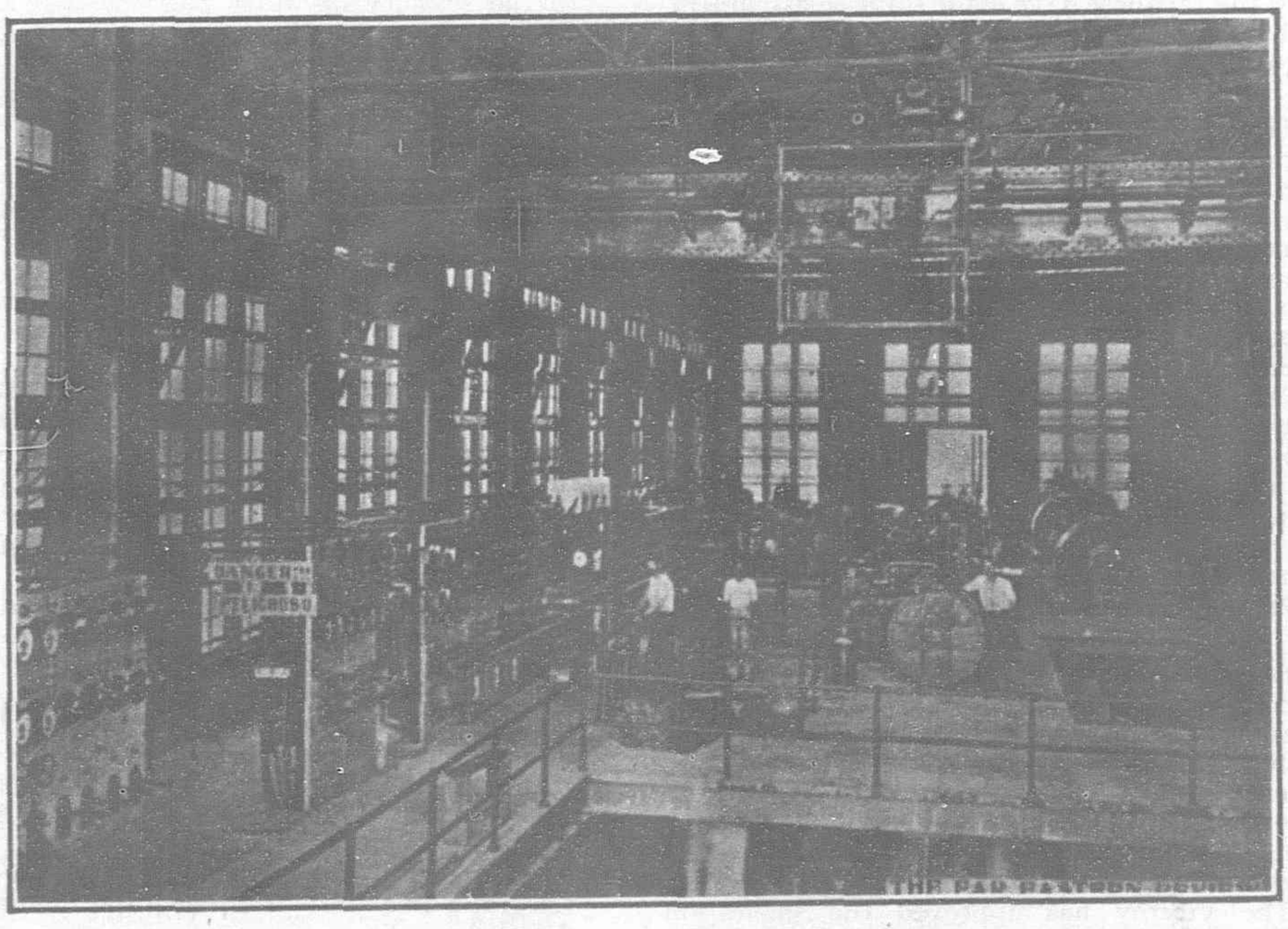
Besides the large passenger traffic enjoyed by this road, it is the purpose of the management to provide ample facilities to handle all the freight that comes to its hand. The military supplies for the fort will form one of the more important sources of revenue and at the same time greatly reduce the cost of transportation to the American government. When the new port is completed a branch of the city system will be built to the docks and the supplies for the fort will be carried over the city lines to the junction at Santa Ana and from there over the extension to their destination.

PHILIPPINE RAILROAD CONSTRUCTION

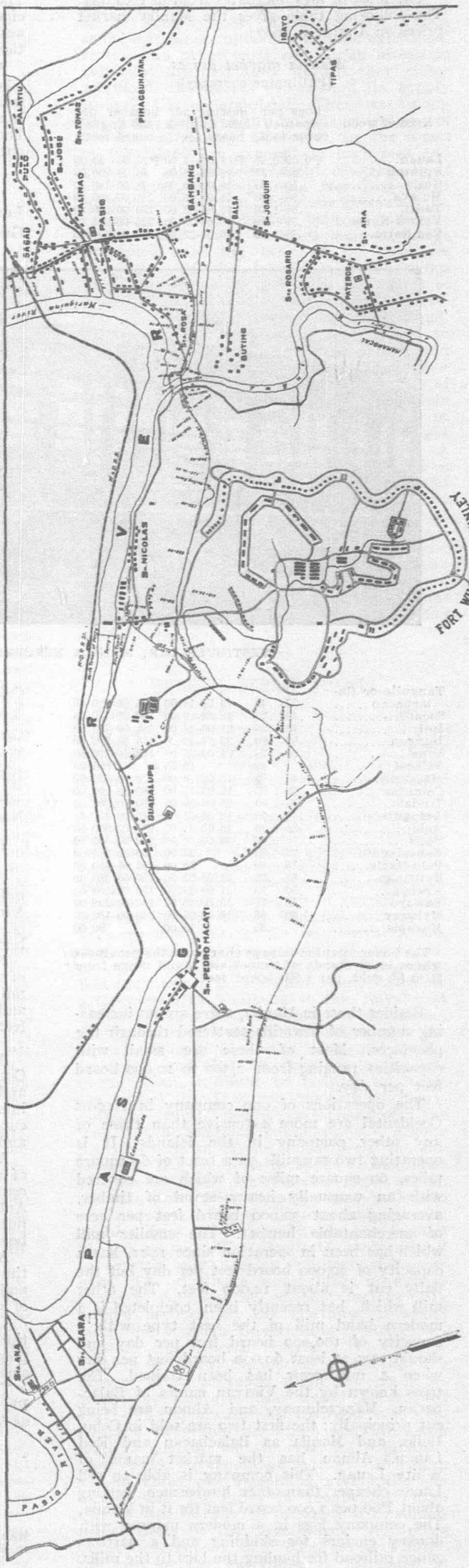
On September 15, the first regular train passed over the Philippine Railway line in Cebu connecting Talisay, a point about five miles south of Cebu, with Danao, the terminal of the first twenty mile section north of Cebu. Two trains are run over this section of the road each day and it is expected that as the steel is laid and additional rolling stock arrives that the operation of the road will be extended. This train is a mixed construction, freight and passenger train made up for the present to cover every condition until the arrival of more engines and other equipment. At the present time there are only two engines on the Cebu road available for all purposes. Four additional engines will be available in October and two more will be sent to Iloilo at the same time.

The operation of this section of the Cebu road was only made possible by the laying of over eight and one-half miles of steel during the month regardless of the inclemency of the weather and the continuous rains.

While the culvert construction has been rushed, over one-third may be said to be of a permanent class on the 25 miles referred to. Of the permanent buildings proposed six depots are under way at the present time.



ENGINE ROOM OF THE STEAM GENERATING PLANT OF THE MANILA ELECTRIC RAILROAD & LIGHT CO., EQUIPPED WITH BABCOCK & WILCOX BOILERS AND WESTINGHOUSE TURBO GENERATORS



FORT MCKINLEY—PASIG LINE OF THE MANILA SUBURBAN RAILWAY CO. AND EXTENSION TO THE MANILA ELECTRIC RAILWAY SYSTEM

PHILIPPINE SAWMILLS AND LUMBER

The following circular on "Philippine Sawmills, Lumber Market and Prices" prepared by Roland Gardner, manager of the Timber Testing Laboratory, has been issued by the Bureau of Forestry of the Philippines and contains some valuable data on the progress made in the development of the lumbering industry of the islands:

Manila is the principal lumber market of the Philippine Islands. Here are located five of the most important mills. Timber is being shipped to them from all parts of the Islands. Three of these mills are equipped with heavy band saws and other modern machinery. The other mills are equipped with vertical gang and circular saws. The combined maximum daily output of the five mills is about 90,000 board feet per day. One mill has a capacity of 30,000 board feet, two of 20,000 board feet and two of 10,000 board feet per day.

During the early operations of the mills in Manila, they had to contend with numerous difficulties. Filipino labor was unreliable; many of the hard woods were difficult to saw and it was impossible to secure a sufficient supply of logs from the provinces with regularity. Conditions have improved, however, during the past two years, and the mills are now operating in a very satisfactory manner. They now saw all commercial woods without difficulty and are depending more and more upon their own cuttings to supply logs to meet their requirements. With proper training, Filipinos are found to be apt in handling machinery. Two of the mills have recently been running at night to fill orders.

Some confusion exists in the market regarding the identity of a few of the leading commercial woods. This is especially true of Lauan. At least six different woods are now being marketed under that name. From the commercial standpoint this is not important, however, as all of these woods resemble the true Lauan (*Shorea contorta*) closely and are of about the same quality. There are several different kinds of wood being sold for Apitong, and occasionally Apitong is sold for Guijo Lauan, Apiton, and Guijo are used to a larger extent than any other fifteen native woods.

Logs are bought and sold by the Spanish cubic foot. One Spanish cubic foot equals 0.765 of an English cubic foot. Lumber is bought and sold by the thousand English board feet.

In sawing the average-sized logs that are brought into the maket, between 5 and 6½ board feet are obtained from 1 Spanish cubic foot, but in the large-sized logs ,sometimes as high as 8 board feet are cut from 1 Spanish cubic foot.

Until quite recently it has been practically impossible to obtain well-seasoned lumber in the market. The mills have been accustomed to sawing to order, consequently lumber was seldom in the yards a sufficient length of time to become seasoned. There were no facilities for kiln drying lumber in large quantites. Two small kilns were erected several years ago, but they were of small capacity and have not been used extensively. One of the leading mills has recently installed a kiln of about 50,000 board feet capacity which is operating very satisfactorily. This kiln is capable of drying 100,000 board feet or more of native lumber per month, the amount depending upon the texture and thickness of the lumber. This concern is now using kiln-dried native lumber in its cabinet factory and is preparing to kiln dry Oregon Pine and California Redwood for use in its planing mill.

A considerable amount of imported lumber is still used in the Islands. Most of this is Oregon Pine and California Redwood. During the period from July 1, 1904, to June 30, 1905, 29,679,644 board feet of lumber and timber, and 9,261 pieces of timber (dimensions not known) were imported. During the same period, 139,148.77 cubic meters of native timber were cut. If this were all sawn into lumber, it would make about 40,000,000 board feet.

The price of logs fluctuates from day to day. The following table gives the Manila market prices on August 1, 1907:

Manila market prices

[Philippine currency]

Kind of wood	Logs per Spanish cubic foot.	Sawing per 1,000 English board feet.	Lumber per 1,000 English board feet.
Lauan	₱0.30-0.35	₱13.00-15.00	₱70.00- 90.00
Apitong	.35- .37	16.00-18.00	85.00-100.00
Guijo	.50- .65	16.00-18.00	98.00-140.00
Molave	.80- .90	21.00-23.00	215.00-300.00
Yacal	.65-1.00	21.00-23.00	160.00-200.00
Yellow Narra	.70- .80	16.00-23.00	225 00-275.00
Red Narra	.75-1.00	16.00-23.00	250.00-300.00
Tanguile or Balacbacan	.33- .45	13 00-18.00	95 00-120.00
Sacat	.40- .75	15.00-18.00	100 00-150.00
Ipil	.76- 85	21 00-23.00	180 00-225 00
Dungon	.80- 90	38 00-40.00	185 00-200 00
Supa	.65- .70	21.00-23 00	140 00-220 50
Balacat	.40	18.00	100 00
Macaasin	.40- 75	15.00-18.00	110 00-150 00
Calantas	.65-1 20	13.00-15.00	180 00-200 00
Tindalo	.78-1 00	21 00-23.00	250.00-300.00
Amuguis	.40- .75	18 00-21.00	110 00-150.00
Acle	.85-1 20	16 00-23 00	280 00-300 00
Betis	.70-1.00	38.00-40.00	250 00-300 00
Bansalaguin	.45- .85	23 00	150 00-260.00
Palo Maria	.75- .80	18 00	140 00-160 00
Batitinan	.65- .75	21.00-23.00	150 00-280 00
Aranga	.50- .75	21 00-23.00	150.00-160 00
Banuyo	.55- .75	16 00-18 00	140 00-220 00
Malugay	.60- .65	16.00-23 00	140.00-130.00
Mayapis	.35	15.00	90.00

The Government stumpage charges in the provinces where large stands of timber are found range from $1 to $5, gold, per 1,000 board feet.

Besides those in Manila, there are an increasing number of sawmills scattered through the provinces. Most of these are small with capacities ranging from 2,500 to 10,000 board feet per day.

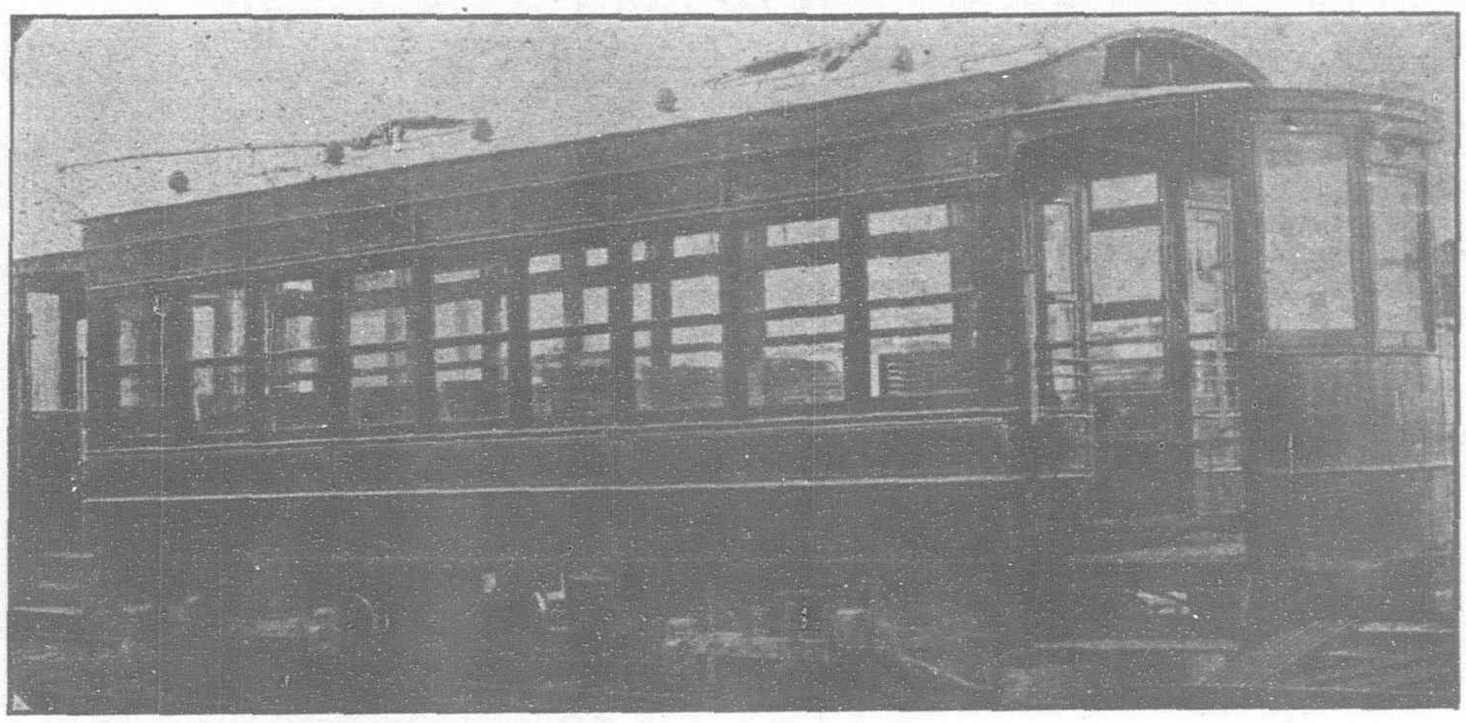
The operations of one company in Negros Occidental are more extensive than those of any other company in the Islands. It is operating two sawmills on a tract of 69 square miles, 60 square miles of which are covered with an unusually heavy stand of timber, averaging about 32,000 board feet per acre of merchantable lumber. The smaller mill which has been in operation since 1902, has a capacity of 20,000 board feet per day but the daily cut is about 12,000 feet. The other mill which has recently been completed is a modern band mill of the best type with a capacity of 100,000 board feet per day and should saw at least 60,000 board feet per day when a mill crew has been trained. The trees known by the Visayan names of Balacbacan, Mangachupay, and Almon are being cut principally; the first two are sold in Cebu, Iloilo, and Manila as Balacbacan and Red Lauan. Almon has the market name of White Lauan. This company is able to sell Lauan cheaper than other lumbermen, getting about ₱60 per 1,000 board feet for it in Manila. The company logs in a modern manner with donkey engines for skidding and a narrow-gauge railroad for hauling the logs to the mills.

The company not only sells lumber in the principal markets of the Islands—Cebu, Iloilo, and Manila—but also has begun exporting the best grades to the United States.

Another company has a mill located on the Island of Basilan, which is cutting about 6,000 board feet of lumber per day. This lumber is marketed in Zamboanga, Iloilo, and Cebu. The Zamboanga prices quoted by this company are as follows:

	Per 1,000 board feet.
Lumbayao	₱ 72.00
Guijo	80.00
Calantas	80.00
Yacal	140.00
Camagon	300.00
Tindalo	180.00
Ipil	180.00
Lauan	50.00
Narra	200.00

Planing, ₱7 extra per 1,000 board feet.



VESTIBULE CAR, MANILA ELECTRIC RAILROAD SYSTEM

Another company, a branch of a Manila milling company, has recently installed in Mindoro a circular-saw mill with a capacity of 5,000 to 10,000 board feet per day. The lumber is shipped to Manila.

Near Baguio, Benguet, the summer capital of the Philippine Islands, there are three small mills sawing Benguet pine, which sells in Baguio and vicinity for ₱75 to ₱95 per 1,000 board feet. The capacity of these mills ranges from 2,500 to 6,500 board feet per day.

A small mill has recently been installed at Gattaran, Cagayan, which supplies Aparri and the towns in the Cagayan Valley with lumber. This mill charges ₱0.80 per English cubic foot for first group timber in the log, and ₱20 per 1,000 board feet for sawing.

About 2,500 board feet per day is the capacity of a mill which is cutting Agoho (*Casuarina equisetifolia* Forts.) almost exclusively at San Antonio, in the province of Tarlac. This is put on the market at Manila for ₱100 per 1,000 board feet.

A new company has recently received a timber concession in the Province of Tayabas and is now erecting a sawmill having a capacity of 15,000 board feet per day.

To supply the rapidly growing demand for timber for the new railroad in the Islands, preparations are now being made to install small mills at several places in the provinces.

The sawmills at present operating in the Philippine Islands, or nearly completed, are as follows:

Location.	Maximum daily output (board feet).	Principal markets.
Manila, P. I.	30,000	Manila.
Do	20,000	Do.
Do	20,000	Do.

Do.....	10,000	Do.
Do.....	10,000	Do.
Cadiz and Sagay, Negros Occidental.....	15,000	Manila, Cebu, Iloilo, and New York.
Do.....	60,000	Do.
Gattaran, Cagayan....	(a)	Local.
Felisen, Lepanto-Bontoc.....	1,500	Do.
Baguio, Benguet.....	2,500	Do.
Do.....	3,500	Do.
Do.....	4,000	Do.
Bayombong, Nueva Vizcaya.....	(a)	Do.
San Antonio, Tarlac..	2,500	Manila.
Murcia, Tarlac.....	(a)	Local.
Bolinao, Pangasinan.	(a)	Do.
Binamalayan, Mindoro.....	5,000	Manila.
Wamburao, Mindoro..	5,000	Local.
angarin, Mindoro...	10,000	Manila.
Puinayangan, Tayabas.....	15,000	Do.
Ragay Gulf, Ambos Camarines.....	(a)	Do.
Tacloban, Leyte.....	3,000	Local.
Palompan, Leyte.....	4,000	Cebu and local.
Dumaguete, Negros Oriental.....	3,500	Local.
Iloilo, Iloilo.....	4,000	Iloilo.
Isabela, Basilan Island.....	6,000	Zamboanga.
Zamboanga, Moro....	(a)	Local.
Cotabato, Moro.....	(a)	United States Army.
Parang, Moro.....	6,000	Do.
Marahui, Moro.....	(a)	Do.
Sibuguey Bay, Moro..	(a)	Local and Philippine railway.

(a) Small mill.

THE DEVELOPMENT OF FORMOSA

Evidence is not wanting that since the Japanese occupation of Formosa, or Taiwan, as it has been re-chirstened, steady progress has been made in the development of the resources of the island. Prior to the appearance of the Japanese on the scene, the aborigines caused the Chinese Government endless trouble, and, as the writer in the *Financial and Economic Annual* of Japan says, "it appears to have become second nature with the villagers to join in disturbances and set themselves in opposition to the Government authorities." Within two years after the Japanese had effected a landing on the island the military administration of the country had been superseded by the civil. Plans, we are told, were drawn up with respect to the subjugation of the aboriginal tribes and the policy regarding communications, finance, and monopoly, and were gradually carried into effect. The finances of the island became independent during 1905-6; for not only were the administrative expenditures met with the receipts of the Government of Taiwan without any pecuniary assistance from the Central Government, but it was also found feasible to defray out of the insular revenue the expenses of undertakings which it had been proposed to provide for by means of public loans; and, moreover, the account for the current financial year is expected to exceed by more than five million yen that for the preceding year, which was a little over twenty millions. The finances of Taiwan are, therefore, in very promising condition. Further, the coinage system of the island has now been placed on a purely gold basis; and the silver coins and silver notes which were hitherto current have almost disappeared from the market. The reform in the coinage system and the development of the productive industries of the island have increased the volume of its foreign trade. It was not deemed advisable to prohibit opium-smoking absolutely, but measures were adopted whereby the habit might be eradicated gradually. Opium was made a Government monopoly and sold at a fixed price, while the local authorities were required to undertake the duty of inspecting all opium dens and warning the people against the evils of opium-smoking. The habit has not yet been suppressed but it is believed that in course of time the consumption of opium in Formosa will cease as the result of the enactments of the authorities against the unlawful use of the drug. Salt, camphor, and tobacco are also Government monopolies and they appear to be in a prosperous condition. With regard to trade generally, an interesting account of what has been done to develop the country is given in the Annual referred to. It is recalled that Taiwan was brought under cultivation by immigrants from South China in the last days of the Ming dynasty. These settlers, as soon as the soil under cultivation became exhausted, removed to other parts and began afresh to cultivate; all that they needed they either produced themselves or awaited its supply from the Chinese mainland. There was among them no development in the direction of division of labor. Moreover, as the coasts of the island are exposed to high seas and gales in all seasons except between April and August, coasting trade was beset with such difficulties that there was absolutely no exchange of commodities between different parts of the island, and this state of things continued until the time of the Japanese acquisition of the island, when enormous differences were discovered in the prices of commodities between localities in the northern and southern portions of the island. Thereupon, the Government itself began to cut canals and open the main roads and commenced in 1899 the construction of a railway to run from one end to the other of the island. That railway is now complete from north to south with the exception of fifteen miles in the middle over which a light railway has for the present been laid. A great step forward has therefore been taken in the means of transportation of goods, and now marked differences in prices are no longer to be found between different parts of the island. The future of the island, it will be seen, is now assured, and the credit must be given to the able administrators who have managed to bring order out of chaos in a country which only a few years ago was overrun by warlike aborigines.—*Hongkong Telegraph.*

BEHRING STRAIT TUNNEL

Conflicting advices from Berlin announce that the Czar has approved the tunneling of Behring Strait together with the proposed scheme to build a railway connecting Kansk, Siberia, with the tunnel, to be contradicted later.

It is believed, however, that the general scheme will be approved subject to certain restrictions by the Russian government. The entire plans proposed covering a scheme to connect Alaska with the extreme north-eastern portion of Russian Asia by a tunnel under Behring Strait, which had fallen into the back ground during the war with Japan, was revived in the spring of 1906. M. Loicq de Lobel, who originated the project, laid the views of an American syndicate before a representative audience at the Naval and Military Club at St. Petersburg. It was shown, as the result of a close examination, that the strait is about 38½ miles in width and 167 ft. in depth, and that, as there are two islands in the strait, it would be possible to divide the tunnel into three sections each about 12½ miles in length, which corresponds with the length of the Simplon Tunnel (q. v.). Among the proposals of M. de Lobel were the following: The syndicate demands no guarantee of interest from the Russian Government, and this would mean a yearly saving to Russia of £2,000,000. The syndicate would give the Russian iron industry orders to the amount of £12,000,000. The syndicate pledges itself to employ only Russian engineers and workmen. The syndicate would make no experiments to colonize the adjacent regions with foreign settlers; on the contrary, it would assist the Russian Government to attract settlers to the Siberian district. The Government is to have the option of buying the railway after 30 years, when any lands acquired by the syndicate would be handed over. The syndicate also undertakes to construct a telegraph line which would be under Russian control, and to establish a Siberian Land Bank to encourage settlers. In return a land grant was demanded, giving the syndicate plots 7½ miles in length on either side of the railway to alternate with similar parcels held by the Government. According to a statement in the "Neue Freie Presse" the cost of the enterprise is estimated at £47,000,000 sterling; the Asiatic end of the line would be at Kansk, on the Trans-Siberian Railway, and the American portion would eventually link with the Canadian Pacific line.

NEW OJI PAPER MILLS

The representatives of the Oji Paper Co. of Tokio, Japan, says the New York *Commercial*, have been inspecting various electrical properties in the United States with the idea of installing a modern electrically equipped paper mill in Japan. As a result, orders have been placed in the United States for a complete electrical and mechanical equipment, amounting to more than $1,000,000.

The new Japanese paper mills, which will be operated by the electric drive, will include, in addition to the motor equipment of the paper making machinery, a new hydro-electric plant with a fifteen mile transmission line and sub-station. At the power station there will be installed four water wheel-driven, three-phase units, generating current at a potential of 3,450 volts, at a frequency of 60 cycles. Current for exciting the revolving fields of these generators will be furnished by the usual twin exciting units, consisting of two 150-kilowatt generators, driven respectively by an induction motor and a small water wheel. Generator regulation will be effected by a Tirrill regulator.

Twelve water cooled, step-up transformers will be arranged in sets of three to raise the generator voltage for transmission. Each transformer will have a capacity of 1,050 kilowatts and the primary voltages will be arranged with connections for either 46,000 volts, 45,000 volts or 44,000 volts. An eight-panel switchboard will be installed in the main station.

At the sub-station near the mill, 12 step-down transformers will be employed to reduce the transmitting potential to 2,200 or 2,100 volts. The switch-board will be arranged to distribute power at the desired voltage directly to the motors.

In the paper mill five 750 horsepower, 2,000 volt induction motors will be used to drive the pulp grinders. These motors have an external resistance in the armature circuit and controllers to vary the speed. Each motor will have an extended shaft and will be so placed between two pulp grinders that both grinders can be driven directly without belting.

Four beater machines are to be driven each by a 350 horsepower induction motor operating at a potential of 2,000 volts. A fifth will be driven by a 200-horsepower induction motor and all will be operated on the rope drive system.

The Oji paper mill will be situated at Hokaido on the sea shore facing the Pacific.

RAILWAY IN SOUTH CHINA

Viceroy Chang Chihtung submits a report on the construction of the railways in South China. He says that when China recovered the right of constructing the Canton-Hankow Railway from the American syndicate, he promised the British Consul that in the event of any foreign fund being required he would first negotiate with English capitalists. A similar agreement was concluded with regard to the railways in Hupeh and Hunan. This was an event of January last year. Subsequently, English, French, and Japanese bankers offered loans in connection with the railway works, but he refused all these proposals, because he did not want any foreign loan. Should he want assistance he will first consult the Hongkong-Shanghai Bank.

VICE-PRESIDENT LAFFIN RESIGNS

Mr. Richard T. Laffin, Vice-President and General Manager of the Manila Electric Railroad and Light Co., has resigned on account of his health and will return to the homeland to recuperate.

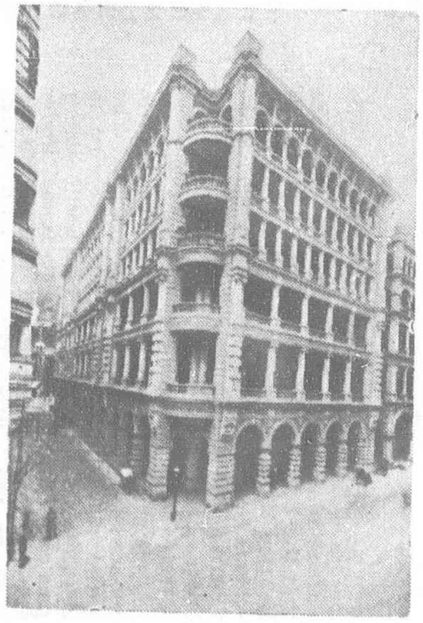
Mr. Charles B. Graves, manager of the Light & Power Department, succeeds Mr. Laffin.



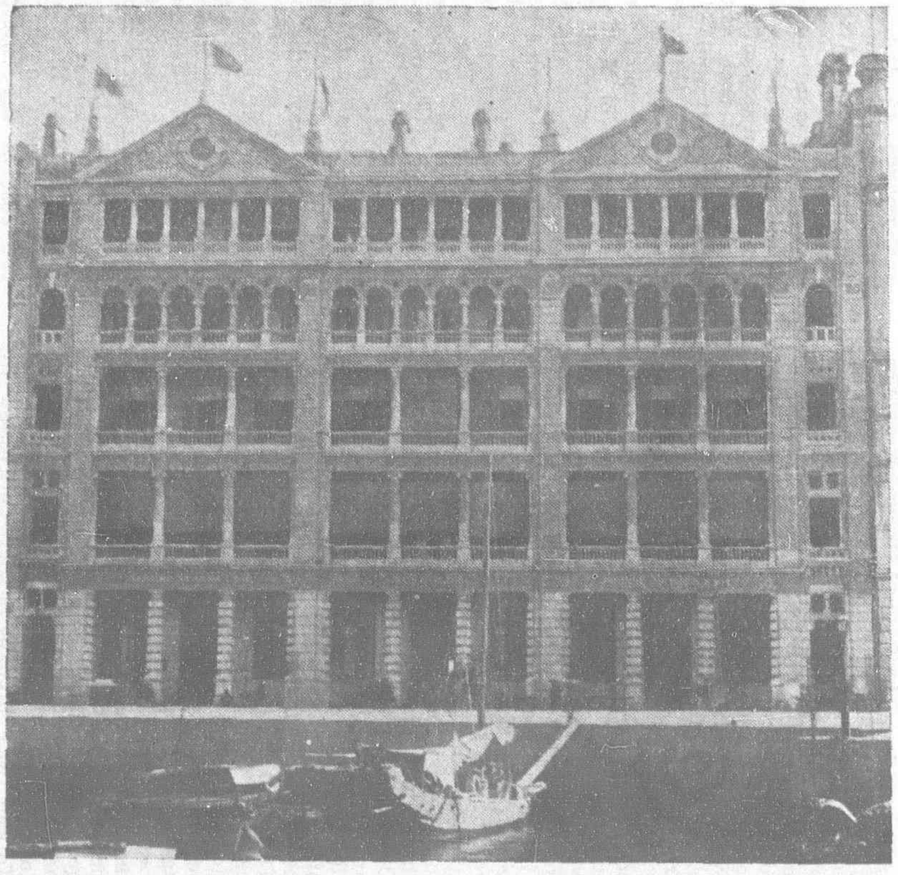
PRINCE'S BUILDING, HONGKONG, SITUATED ON THE SQUARE AND FACING THE PRINCE OF WALES' STATUE



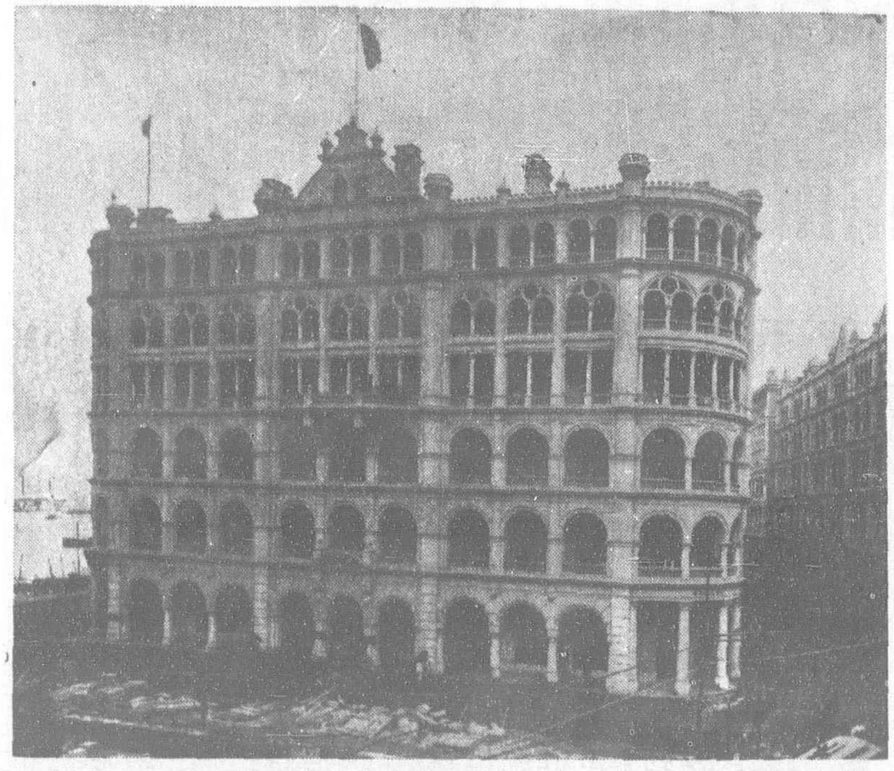
QUEEN'S BUILDINGS OF HONGKONG, FRONTING QUEEN VICTORIA'S STATUE AND THE ONE OF KING EDWARD UNVEILED BY THE DUKE OF CONNAUGHT LAST YEAR



ROYAL BUILDINGS LOCATED IN THE ACTIVE BUSINESS SECTION OF HONGKONG



KING'S BUILDING—A PROMINENT MODERN STRUCTURE ON THE PRAYA RECLAMATION AT HONGKONG



HOTEL MANSIONS, HONGKONG, ONE OF THE MOST MODERN BUILDINGS SITUATED ON THE PRAYA RECLAMATION AND FACING THE HARBOR

CAMPHOR PRODUCTION IN FORMOSA

Consul J. H. Arnold, of Tamsui, reports, as the result of an interview with the chief of the camphor bureau of the Formosan government, the following information regarding the production of camphor:

The manufacture of camphor in Formosa is confined to trees of upward of 50 years of age. The camphor bureau prohibits the cutting down of trees of a less age than 50 years. Although investigations as to the number of old trees in the island are not as yet completed, the number of these trees is far less than investigations a few years ago made it appear. Recent investigations warrant the statement that the supply of old trees will, at the present rate of cutting, become exhausted in less than fifty years. The old trees now standing are confined to the mountainous eastern half of the island, in regions for the most part still under control of savage tribes. The work of subjugating these tribes is difficult and one requiring much time. At the present rate of subjugation it will be many years before their territory can be safely exploited. Besides the subjugation of savage tribes, there are other difficulties to be overcome. These mountains are covered with dense jungles, and the work of building roads in order to render the camphor forests accessible to profitable exploitation is one requiring the expenditure of much labor and time.

CLIMATE AND OTHER DISADVANTAGES

Moreover, the sanitary conditions throughout much of this territory are such as to materially reduce the efficiency of labor employed therein. For instance, in the Daito prefecture the supply of trees is estimated at a quantity sufficient to produce 40,000,000 pounds of crude camphor. Owing to the lack of roads and to the presence of head-hunting tribes of savages, much of this material will have to lie untouched for years. Furthermore, the sanitary conditions in this district are such as to seriously cripple the labor employed there. A Japanese company took 1,000 coolies into this district a few years ago for the purpose of exploiting the camphor forests. Reports from this company state that 33 per cent of its labor is incapacitated through the contraction of fevers. Last year twelve of its men (Japanese) were decapitated by head-hunting savages.

At present the greater part of the camphor produced in the island comes from the trees in the Toen prefecture. There is reported here a scarcity of coolie labor to work the trees. With prosperous conditions obtaining throughout the civilized portions of the island, there is naturally a reluctance upon the part of the coolie labor to risk attacks by savages in engaging in labor in the camphor forests at a wage equivalent to 40 cents United States currency per day, when they are enabled to secure one-half this amount in the more peaceful pursuits on the lowlands. Thus the difficulties to be overcome in order to exploit the remaining camphor forests of the island are such as to render the cost of securing the product a constantly increasing quantity.

The camphor bureau expects to produce 5,000,000 kin (6,667,000 pounds) of crude camphor, and about one-half that amount of camphor oil during the present [year. They expect to produce a similar quantity during each year during the next few years with probabilities of a slight increase thereafter. It is said that Formosa at present produces about 75 per cent of the world's supply of camphor, the remaining 25 per cent being produced by Japan and China.

AFFORESTATION

Until Japan took possession of this island practically nothing was done to replace the trees cut down except what was done by nature itself. The camphor tree grows readily from seed and requires but little attention. Since the organization of the camphor monopoly in 1899 the Formosan government adopted a system of afforestation which, it is hoped, will result in guaranteeing to the island a constant supply of raw materials. The camphor bureau provides three methods of afforestation: Government replanting; replanting by schools, villages, and agricultural societies, and replanting by private concerns. Up to the present year the securing of seeds was difficult.

While the Formosan trees are good seed producers, yet, owing to the fact that the seed ripens quickly, and if not picked within two days after it blows away, much difficulty has been experienced in collecting seeds, as the trees were not afforded the proper protection. Owing to the large exportations of Japanese seeds to foreign countries, the Formosan authorities could not depend upon Japan for a supply. The camphor bureau now designates and registers certain of the seed-producing trees and prohibits their being cut down; in this manner a plentiful supply of seeds is being provided for. Agricultural experiment stations are maintained throughout the island, and to these is assigned the task of planting the seeds and providing nurseries for the young plants. The young plants are taken from these nurseries and replanted in districts set aside for that purpose. It required several years to secure sufficient trained cooly labor to attend to the setting out of these trees.

FUTURE PLANTS—TWO VARIETIES OF TREES

Since 1900 the government has planted about 3,000,000 young trees and has arranged to add another 500,000 to this number during the present year. It is expected to be able to plant 750,000 each year after the present year. Trees planted in the mountainous districts are set out with the idea of prohibiting their utilization for camphor production for a period of forty or fifty years. Those which are planted on the lowlands are set close together in rows with the idea in view of utilizing their leaves, after they have attained a ten-years' growth, in the manufacture of the crude camphor. The lowlands planted in camphor are designated as camphor gardens rather than as camphor forests. Beyond an occasional clearing of the ground about the young tree it requires no attention in the way of cultivation or irrigation. There are many varieties of worms which tend to attack the young plants, but the government experts report that but 6 trees out of each 1,000 planted die.

There are two varieties of trees—the camphor-producing tree and the camphor-oil producing tree. The former is the more valuable. It requires an expert to detect the difference between these two varieties in the standing trees. The camphor oil produces but 0.49 of its weight in camphor. The government nurseries furnish young plants to the schools, villages, and agricultural societies desirous of planting the camphor trees, and many such have availed themselves of this offer. Private concerns in Formosa desirous of engaging in the raising of camphor are also supplied by the government nurseries with the young plants. Hence it is quite evident that afforestation of camphor in Formosa is proceeding at a good pace. Reports from Japan estimate the number of trees planted there during the past ten years at 8,000,000. Reports from China state that, while the Chinese are interesting themselves in the question of afforestation, up to the present nothing has been done toward planting of new trees.

PROCESSES OF MANUFACTURE

Crude camphor is manufactured from the wood by the simple process of distillation. Chips of camphor wood are placed in a clay-plastered retort which rests upon a circular wooden rim of a water pan. This water pan sets over a fire. Connected with the retort at some distance away are the crystallization and cooling boxes in which the camphor vapor passes, is cooled, and crystallized. (For a detailed description of this process see Davidson's "Formosa, Past and Present.") The camphor thus crystallized is dark in appearance and is known as crude camphor. These stills or stoves are erected as close to the supply of the raw material as is possible; hence throughout the camphor-producing districts there are found many of these stoves. The products of the different stoves are not uniform in quality. The monopoly bureau operates in Taihoku city a camphor factory where the products of the various stoves are graded and by redistillation rendered uniform. This factory produces two grades of camphor, known as "B" and "BB" grades. The "B" grade, that which is exported to the American market, is rated crude camphor, containing a higher percentage of oil and water than the "BB" grade, which more nearly approaches a refined camphor. The "BB" grade differs from properly refined camphor in that it is not clarified. Owing to the fact that the monopoly bureau's plant was partially destroyed by fire a few months ago it has been impossible to produce the "BB" grade, and consumers are obliged to take the "B" grade products until the plant is repaired. The crude camphor which is not exported to foreign markets is sent, along with the camphor oil, to the Kobe refineries, where refining is completed.

Although the "BB' grade is rated by the American customs examiners as a refined camphor, yet the camphor bureau in Formosa terms it crude camphor, for the reason that a clarifying process is necessary to the completion of the refining.

MONOPOLY IN SALES—AN ARTIFICIAL SUBSTITUTE

It might be said that Formosa, in conjunction with Japan, holds a monopoly upon the production and sale of the world's supply of camphor. Although the customs returns for China show that there were exported from that country during the year 1906 about 12,000 piculs (1,600,000 pounds) of crude camphor, yet the Formosan industry fears no competition from that source. Reports of planting camphor in Ceylon, Florida, Texas, and Mexico do not disturb the prospects of the Formosan product in the eyes of the authorities here. These contend that the more camphor trees there are planted the less likelihood there will be of the successful production of an artificial substitute. Artificially produced camphor seems to be a reality, but it is contended that its cost of production is too great to warrant its being made to enter into competition with the natural camphor.

The bulk of the world's camphor production goes into the manufacture of celluloid. It is estimated that about 70 per cent of all camphor produced is utilized in the manufacture of celluloid. Owing to the difficulties which many manufacturers of celluloid have experienced in securing enough camphor to fill their orders these have often been obliged to purchase supplies through brokers. The Formosan government now declares its intention of remedying this state of affairs to some extent, at least. The camphor bureau has instructed its selling agents to supply first and foremost its customers among the celluloid manufacturers. A list is to be made up setting forth the demands of the various celluloid mills, basing these demands upon the capacities of the respective mills. In the future these manufacturers will receive their supplies upon a basis of their actual demands.

FUTURE PLANS OF JAPANESE

As Japanese capital is already engaging in the erection of celluloid factories in Japan it is only to be expected that the Japanese manufacturer will also come in for his pro rata share of raw materials. The monopoly bureau disposes of its camphor through a selling agent. Each year a contract is made with an agent for the disposition of the products of the bureau. At present a British firm [name on file at Bureau of Manufactures] holds the selling agency. It is rumored that with the expiration of the present fiscal year in March, 1908, the selling agency will pass into Japanese hands. While this rumor sounds plausible, naturally the authorities have nothing to say in regard to it.

The monopoly bureau regulates the prices to be made to the foreign purchasers and designates the amounts to be sold to certain classes of purchasers. The present price of the "B" grade camphor is $69.50 United States gold a picul (133⅓ pounds), f. o. b. New York. This price is considerably higher than that which obtained five years ago. As for further advances, it appears that there will be no advances in the near future. I dare say the fear of encouraging the production of an artificial camphor will in a great measure retard tendencies to future advancements in the prices of the Formosan product

TRADE OF THE UNITED STATES WITH ITS NON-CONTIGUOUS TERRITORIES 1903-1907

Trade of the United States with its non-contiguous territories will aggregate nearly 150 million dollars in the fiscal year which ends with the present month, against less than 100 millions in 1903, the first year for which complete figures of trade with all the non-contiguous territories are available. Prior to 1903 no official figures of trade with Alaska were reported to the Bureau of Statistics, and therefore a complete picture of trade with the entire non-contiguous area now under the flag of the United States can only be given for the term 1903-1907. During that period the shipments from the United States to its non-contiguous territories have increased about 90 per cent and the receipts of merchandise from them have increased about 25 per cent. Comparing the ten months of the present fiscal year for which figures are now available with the corresponding period of 1903, the first year for which complete figures can be had, the growth in shipments to the entire non-contiguous territory of the United States has been from $29,529,068 to $55,149,243, an increase of 86.76 per cent, while shipments to foreign countries were increasing but 31.4 per cent. During the same period the merchandise sent from the non-contiguous territories to the United States has increased from $48,250,099 to $59,693,323, an increase of 23.7 per cent, while merchandise received from foreign countries was increasing 38.2 per cent.

The growth in shipments from the United States to its non-contiguous territories has been more rapid, measured in values, than that in shipments from those territories to the United States, this fact being due, in the shipments of the islands, to increased requirements for railway construction, plantation development, etc., and in the shipments from the islands to the recent fall in the price of sugar, a staple article of shipment from Hawaii and Porto Rico to continental United States. The value of shipments from Hawaii to the United States was in the ten months of 1905 nearly 25 million dollars and in the corresponding period of 1907 but 21½ millions, this decrease being due to a reduction in the price of sugar, the chief article sent from that territory to the United States, rather than to any decrease in quantity. In the ten months of 1905 the 580,940,402 pounds of sugar shipped from Hawaii to the United, States were valued at $24,115,252, while the 605,431,431 pounds of sugar shipped in the same period of 1907 were valued at but $20,282,387, an actual increase of 24 million pounds, but a decrease of nearly 4 million dollars in value. In the case of Porto Rico, the shipments of sugar to the United States amounted in the ten months of 1905 to 199,867,093 pounds, valued at $8,870,921, and in the corresponding months of 1907 amounted to $298,918,649 pounds, valued at $10,746,714. The average price per pound of the sugar shipped from Hawaii to the United States in the ten months of 1905 was 4.15 cents and in 1907 3.35 cents; and of that shipped from Porto Rico to the United States in 1905, 4.444 cents, and in 1907 3.59 cents.

Porto Rico shows a larger total in the trade account with the United States than any other of the non-contiguous territories. The shipments to Porto Rico in the ten months ending with April, 1907, amounted to 21 million dollars, against 10 millions in the same months of 1903, having thus more than doubled meantime; and the shipments from that island to the United States amounted in the ten months of 1907 to a little less than 17 million dollars, against less than 9 millions in the same months of 1903, having thus nearly doubled during that period. To the Philippine Islands the shipments amounted to slightly less than 7½ million dollars in the ten months ending with March, 1907, against 3⅓ millions in the same months of 1903, having thus considerably more than doubled meantime, while the shipments from those islands to the United States in the ten months of 1907 were 9⅔ millions in value, against 10¾ millions in the same months of 1903. To Hawaii the shipments during the ten months of 1907 were valued at 11⅔ million dollars, against 9 millions in the same months of 1903, and the shipments from that territory to the United States amounted to 21½ million dollars in the ten months of 1907, against 18½ millions in the same months of 1903. To Alaska the shipments aggregated practically 15 million dollars in value during the ten months of 1907, against 7 millions in the same months of 1903, and the shipments from that territory to the United States in the ten months of 1907 amounted to 11¾ millions, against a little over 10 millions in the corresponding months of 1903.

Trade with Porto Rico shows a larger total and a more rapid growth than that with any other of the non-contiguous territories of the United States. Lying at a comparatively short distance from the great consuming centers of the country and producing a class of articles not produced in continental United States in sufficient quantities to supply home demand, its growth in production and consequent consuming power has, under the development resulting from investments of capital from the United States, been very rapid. This increase in production has proportionately increased consuming power, and in addition to this the investment of capital from the United States in railways, sugar plantations, tobacco factories, and other manufacturing establishments has increased its demand upon the manufactores of the United States for the machinery and supplies required in that development. The shipments of iron and steel manufactures from the United States to Porto Rico in the ten months ending with April, 1907, amounted to $3,352,252, against $888,360 in the same months of 1904. The total shipments of cotton manufactures to the islands in the ten months of 1907 amounted to $2,945,258, against $1,415,784 in the corresponding months of 1904. The value of breadstuffs shipped to the island in the ten months of 1907 was $1,329,959, against $978,291 in the same months of 1904. Cars and carriages shipped to Porto Rico in the ten months of 1907 amounted to $507,278, against $110,806 in the same months of 1904; leather and manufactures thereof in the ten months of 1907 to $687,287, against $236,425 in the same months of 1904; meat and dairy products, $1,959,055 in the ten months of 1907 against $1,031,569 in the same months of 1904; rice, $3,430,300 in the ten months of 1907, against $1,970,479 in the same months of 1904, and the wood and manufactures thereof, $1,131,694 in the ten months of 1907, against $359,604 in the same months of 1904, these figures relating to domestic merchandise only. The shipments from Porto Rico to continental United States are chiefly sugar, tobacco and fruits, those of sugar having amounted to $10,746,714 in the ten months of 1907; against $5,854,708 in the corresponding months of 1904; tobacco and manufactures thereof, $4,645,701 in the ten months of 1907, against $1,338,185 in the same months of 1904, and fruits, $665,838 in the ten months of 1907, against $400,452 in the corresponding months of 1904.

To the Philippine Islands the shipments have grown from $3,326,240 in ten months of 1903 to $7,411,470 in the same months of 1907, an increase of 123 per cent. Cotton manufactures sent to the islands, which in the ten months of 1903 were $295,133, were in the same months of 1907 $1,536,508 in value; iron and steel manufactures, which in the ten months of 1903 amounted to but $553,850, were in the same period of 1907, $1,582,177. The value of mineral oils shipped to the islands from the United States increased from $275,981 in the ten months of 1903 to $585,232 in the same months of 1907, and breadstuffs from $209,736 in the ten months of 1903 to $486,576 in the corresponding months of 1907. Merchandise sent from the Philippine Islands to the United States consists chiefly of manila hemp, of which the total value in the ten months ending with April, 1907, was $9,049,984 out of a grand total of $9,630,975, the value of all other articles amounting to but $580,991 of which $374,092, was sugar, while in the same months of 1904 the value of the hemp sent from those islands to the United States was $9,499,422, and that of all other articles $1,012,152, of which $884,160 was sugar.

In the trade with Hawaii the shipments from the United States include merchandise of all kinds, the more important groups having been in the ten months ending with April, 1907, breadstuffs, $1,153,846; cotton manufactures, $1,295,569; iron and steel manufactures, $1,468,651; mineral oil, $830,451; and meat and dairy products, $525,344. The principal article in the shipments from Hawaii to the United States is sugar, which in the ten months of 1907, amounted in value to $20,282,387, while the value of all other merchandise shipped to the United States was $1,184,886.

In the trade with Alaska the shipments from the United States are composed of miscellaneous merchandise, more especially iron and steel manufactures, which in the ten months of 1907 amounted to $3,094,815; meat and dairy products, $1,770,995; wood and manufactures thereof, $728,687; woolen goods, chiefly wearing apparel, $739,184; spirits, wines and liquors, $659,679; vegetables $597,751; fruits, $430,986; cotton manufactures, $480,107; and breadstuffs, $578,494. The shipments from Alaska to the United States consist chiefly of canned salmon, of which the total for the ten months of 1907 was $8,423,146; other fish, $607,431; copper ore, $1,104,469; and fur and fur skins $568,931, while domestic gold from the mines of Alaska shipped to the United States during the same period amounted to $17,727,727 and silver to 13,738. The shipments of domestic gold from Alaska (including in this term only that from mines within Alaska and not including that from adjacent British territory shipped by way of Alaska) amounted in the ten months of 1904 to $5,895,091, and in the same months of 1907, as above indicated, to $17,727,727 having thus trebled in value in the three-year period from 1904 to 1907, and being in the ten months of 1907 two and a half times the sum paid for Alaska.

SEATTLE-ORIENTAL RUN

Two new steamships have been placed on the Seattle-Oriental run to be run in conjunction with the Boston Steamship Company's fleet. The *Kumeric* and *Suveric*, the two largest steamships of the Wier fleet, will sail regularly from Seattle for Japan and China, going through to Manila, beginning this month.

The following announcement was made recently: The *Kumeric* and *Suveric* will be on the Orient run soon. The *Kumeric* will sail from this port during the month of August and will be followed in October by the *Suveric*, which will make another trip to North China ports before assuming the new service.

"It is our intention to run these vessels in conjunction with the Boston Steamship Company's fleet, the sailings being arranged so as to come in between the sailings of their fleet. Both of these vessels are new and represent the highest grade of their class. With the addition of these two vessels, the company will be able to give shippers a three-week service between Seattle and the Orient. As with the Boston Steamship Company's fleet, both of these vessels will call regularly at Manila, Hongkong, Shanghai, Kobe and Yokohama."

These two vessels, with the exception of the *Minnesota*, are of the largest class of vessels to engage in the Oriental trade, and have a cargo-carrying capacity of 17,000 measurement tons, or 12,000 tons dead weight. Both ships are practically new, the *Kumeric*, which will be the first to leave Seattle on the new schedule, is at present making her maiden voyage and is bringing 1,000 Portuguese immigrants to Honolulu, from which port she will come to the navy yard, Puget sound, for which place she has a cargo of 8,000 tons of Cardiff coal consigned to the government. The vessel was built in Glasgow, in 1906, by Russell & Co. The dimensions are 460 feet in length, 55 feet in breadth and 29 feet depth of hold, with a net tonnage of 3,980 tons.

The *Suveric* is a sister ship of the *Kumeric*, and is well known at Seattle, as is Capt. Shotten, her master, having loaded cargo there for the North China trade. The vessel was built last year and has practically the same dimensions as the *Kumeric*, being 460 feet in length. 55.1 feet in breadth and 28.6 feet depth of hold.

LESSONS IN ESPERANTO

LESSON III

LA MALBELA ANASIDO (THE UGLY DUCKLING)

Fabelo de Hans Christian Andersen.

Ia|n bel|a|n tag|o|n anas|in|o en la kamp|ar|o sid|is sur si|a nest|o, el|kov|ant|e si|a|j|n ov|o|j|n. Tiu okup|o, tamen, ŝi|n preskaŭ enu|ig|is, ĉar apenaŭ amik|in|o far|is al ŝi vizit|o|n. La ali|a|j ge|anas|o|j nağ|ad|is sur la lag|et|o, tiom okup|at|a|j pri si|a|j propr|a|j afer|o|j, ke ili ne dezir|is babil|ad|i.

Fin|e unu ov|o ek|krev|is, jen ali|a, post|e tri|a, kaj tiel plu. "Krik" far|is unu, "krik, krik," la du|a, ğis dek|du ov|o|j est|is fend|iğ|int|a|j, kaj la mal|-grand|a|j lanug|a*j*o|j |rigard|is el la mal|-larğ|a nest|o kvazaŭ tra fenestr|o.

"Kvak, kvak," dir|is la patr|in|o, kiam la anas|id|o|j, ĉirkaŭ|rigard|ant|e mir|-eg|e, kiel ebl|e plej rapid|e el|ven|is. "Kiel grand|a est|as la mond|o!" dir|is la id|et|o|j.

"Ĉu vi kred|as, ke tio ĉi est|as la tut|a ter|o?" dir|is la patr|in|o; "Ho ne, ği etend|iğ|as ğis long|e preter la ğarden|o. Sed ĉu vi ĉiu|j est|as kun|e? Ho ne!" al|don|is la anas|in|o, "ne ĉiu|j jam est|as el|kov|it|a|j; la plej grand|a ov|o rest|as ankoraŭ ne|fend|iğ|int|a, Kiom da temp|o ti|o daŭr|os? Ver|e, mi komenc|as el|lac|iğ|i." Tamen ŝi de|nov|e sid|-iğ|is sur la nest|o|n.

EXPLANATORY NOTES

IAN BELAN TAGON. The accusative is used here because it stands for JE LA BELA TAGO, *on a certain fine day*. Likewise we should say TIUN ĈI MATENON for *this morning*, or LA 3AN DE MAJO for *the 3rd of May*.

SIA NESTO, SIAJN OVOJN. The reflexive-possessive pronoun SIA always refers to the subject of its clause, in this instance, ANASINO

Note also that the adjective has always to agree with its noun as regards case and number.

The same is the case with the impersonal pronoun SI, which corresponds to the Latin "se," and means *himself, herself, itself, oneself*. or *themselves* according to the subject of the verb. Thus we have ĞI DIRIS AL SI (it said to itself); ŜI AMAS SIN (she loves herself). Similarly the possessive pronoun SIA means *his, her, its, one's* or *their* according to circumstances. LI SERĈAS SIAN ĈAPON (*He is looking for his cap*). ILI ALVOKIS SIAN PATRON (*They called to their father*).

On the other hand, we say TIU OKUPO ŜIN ENUIGIS and AMIKINO FARIS AL ŜI VIZITON because ŝin and ŝi do not refer to the subject of the sentances OKUPO and AMIKINO, but to ANASINO.

The advantage of an inflected accusative case, which renders the sense of a sentence quite independent from the order of the words, may be seen from the latter example.

Thus instead of APENAŬ AMIKINO FARIS AL ŜI VIZITON, we may say, e.g.:

VIZITON AL SI FARIS APENAU AMIKINO.

AL ŜI AMIKINO VIZITON APENAU FARIS.

FARIS AL ŜI APENAU AMIKINO VIZITON.

AMIKINO VIZITON FARIS AL ŜI APENAŬ.

In whatever order the component parts of the sentence may be put, the sense is not altered in any way.

Of great importance is the use of the suffixes IG and IĜ. These can be attached to almost any stem. Thus we have ENUIGI *to make wearied*, LACIĜI *to become tired*, FENDI *to split* (transitive) forms FENDIĜI *to split*, (*become split*, intrans.)

The prefix EK denotes a beginning, thus EK-KREVAS *begins to burst*.

EL (out of) used as a prefix gives the meaning of completion, ELKOVI *to hatch out*, ELLACIĜI *to become tired out*.

The word ARO means a collection, KAMPARO *a collection of fields, the country*, IDARO *a collection of young ones, a brood*.

The prefix GE unites the genders, GEANASOJ *ducks and drakes*.

KIEL EBLE PLEJ RAPIDE (as possible quickest). This is the Esperanto way of saying *as quickly as possible*. Of course it would not be wrong to say TIEL RAPIDE, KIEL EBLE.

ĈU VI KREDAS? *Do you believe?*

All questions, unless they begin with one of the interrogatives, KIO *what*, KIU *who, which*, KIES *whose*, KIE *where*, KIEL *how*, KIAM *when*, KIAL *why*, KIA *of what kind*, or KIOM *how much*, are headed by the conjunction ĈU, *whether*. This makes the sense of any Esperanto sentence independent of the order of the words, and avoids ambiguity, which sometimes occurs in national languages. KUNE, *together*. Note that prepositions may take the adverbial ending E.

ŜI SIDIĜIS SUR LA NESTON. The accusative is required because there is direction, *she sat down on the nest*, whereas '*she sat* (*was sitting*) *on the nest*" ought to be rendered by ŜI SIDIS SUR LA NESTO.

OBL. ON. OP.

The cardinal numbers never change their forms.

1	UNU	4	KVAR	7	SEP	10	DEK
2	DU	5	KVIN	8	OK	100	CENT
3	TRI	6	SES	9	NAU	1000	MIL

The tens and hundreds are formed by simple junction of the numerals: 533=KVIN'CENT TRI'DEK TRI.

Ordinals are formed by adding the adjectival A to the cardinals—UNU'A, *first*. DU'A, *second*. TRI'A, *third*.

Multiples are formed by OBL: KVAR'OBL'A, *fourfold*. DEK'OBL'A, *tenfold*. Fractionals by ON': DU'ON'O, *a half*. TRI KVAR'ON'O'J, *three quarters*.

By adding OP collective numerals are formed: OK'OP'E, *by eights*. DEK'DU'OP'E, *by dozens*.

To form distributives one uses the preposition PO: PO SES, *at the rate of six*. PO NAŬ'-DEK, *at the rate of ninety*. Firstly, secondly, thirdly are rendered by the adverbial form of the ordinals: UNU'E, DU'E, TRI'E, &c.

THE DEVELOPMENT OF KIAOCHAO

There has just been laid before the Reichstag the official statement dealing with the development of the Kiaochao Protectorate during the twelve months ending with October 1, 1906. The statement is brought nearly up to date by supplements relating to certain specially interesting events, which occurred before the middle of last month. The expectations, which were formed of the development of the colony, have been fulfilled in every branch of commercial and general activity. The revenue of the colony rose from £50,059 to £68,524, or an increase of about thirty-seven per cent. Of the revenue the sum of £11,843 represents the takings from January to June, 1906, under the new German-Chinese customs agreement; thus, deducting this sum received from a new source of revenue, there remains an increase of fifteen per cent. According to the Chinese Customs statistics the value of the trade of Tsingtao rose from $32,-400,000 to $39,400,000. Under the new Customs Agreement referred to, these figures include, since January 1, 1906, the goods arriving by sea for use in the colony, and, as such, until that time duty-free.

The shipping of the port of Tsingtao increased by more than 56,000 registered tons, and amounted to 476,646 tons. A specially characteristic feature of the economic development of the colony as also of the far-spreading Hinterland, upon which the colony is exercising an influence which is increasing at a rapid rate, is seen in the traffic of the Shantung Railway. The passenger and goods traffic alike of that railway have grown in a remarkable manner; thus, the number of passengers carried was 811,285, as compared with 780,228, and the freight amounted to 377,649 tons as compared with 279,740 during the previous official year. Coal forms by far the bulk of the freight, and 13,716 truck-loads were conveyed. As such great progress was made by the Shantung Mining Company in 1906 the Shantung Railway will be called upon soon to carry larger quantities of coal. In less degree the freights of agricultural produce and general goods show an increase of freight.

Although the economic development of Kiaochao is regarded as having been thoroughly satisfactory, yet the report points out that the progress made would have been considerably greater if trade all over the Far East had not been disturbed in certain ways, especially by the extremely high rate of the Mexican dollar, which is the usual coin of currency along the whole coast line. Still, the report acknowledges that it is out of the question for Kiaochao to have its own particular currency. However, after negotiations lasting several years between the Naval authorities and all other Imperial authorities, and the German-Asian Bank, the bank mentioned received from the Chancellor of the Empire on June 8, 1906, the concession for fifteen years to issue banknotes through its branches at Kiaochao and in China.—*London Globe*.

OBITUARY

Mr. Sam H. Shorrock of the firm of Messrs. Shorrock & Co. of Shanghai died very suddenly at his home there on August 31. The deceased was widely known in the Far East and his passing out was a severe shock to the community.

JAPAN'S PROPOSED RAILWAY DEVELOPMENT

At a recent cabinet meeting held at Tokio it was decided to expend about 150,000,000 yen in railroad development in Japan during the next five years. The estimates approved are as follows:

Construction of several secondary lines, *yen* 83,000,000; 900 locomotives, *yen* 22,500,000; 19,000 freight cars, *yen* 19,000,000; 1,000 passenger carriages, *yen* 10,000,000; reconstruction and extending of 30 stations, *yen* 15,000,000; and five steamers needed in conjunction with the railways, *yen* 1,500,000.

Mines, Mining and Minerals in the Philippine Islands

(Edited by the Bureau of Science, Manila)

SULPHUR IN THE PHILIPPINES

Tacloban and Burauen are connected by a wagon road about twenty-six miles long which passes through the towns of Palo, Tanauan and Dagami. The portion of the road between Tacloban and Tanauan, a distance of about nine miles, is in excellent condition and easily passable in any sort of weather. Broken bridges between Tanauan and Dagami make the second portion of the road, which is about eleven miles long and otherwise in very good condition, somewhat more difficult for a wagon or cart to travel. The last portion of the road, between Damagi and Burauen, is by far the worst, being almost impassable in a cart in the rainy season on account of the mud. From Burauen to the solfataras is a distance of about six miles. The two places are connected by a mountain trail which, although good the greater part of the way, is in places so rough, steep, and overgrown that it would have to be repaired before it became passable to pack animals.

Going south from Burauen, Leyte, the Daguitan river, about 200 feet wide, is crossed at the outskirts of the town. The trail is in good condition and remains fairly level up to the crossing of the Marabang, about two miles beyond Burauen. Beyond the crossing of the Marabang the trail becomes steeper and more difficult but yet passable with a horse, at least so far as the barrio of Jibonaoan. This is a small barrio of about a dozen families all of whom are engaged in the cultivation and the stripping of hemp, the main industry of this part of the province. Beyond Jibonaoan, still following a southerly direction, the winding trails lead through a series of hemp plantations constantly ascending towards the summit of Mount Kansiboi, the elevation of which is about 1020 feet above sea level. Nearing the summit, which is about two and a half miles south of the barrio of Jibonaoan, the trail becomes rough and steep, cultivation gradually ceases and is succeeded by a natural forest of fine tall hardwood trees. About half a mile beyond the Kansiboi is a narrow cut in the mountains aptly called La Puerta, the approximate elevation of which above the sea level is 1310 feet.

The descent of the southern slope of the ridge is rather sharp and made difficult by the thickly intertwining underbrush. The earliest indication of solfataric activity is observed in crossing the Mainit river about a third of a mile south of La Puerta. This stream is only about fifteen feet wide and remarkably clear. but so scalding hot that it cannot be waded. The banks of the stream are barren of vegetation and are covered with white kaolinized igneous boulders between and in the interstices of which, are small quantities of native sulphur.

The source of the heat and sulphur carried by the Mainit lies in the solfatara which is only about a quarter of a mile east of the river crossing and about a hundred feet above it. The To-od Grande, as the solfatara is called, is a large barren space about 800 feet wide. Its surface consists of white kaolin resulting from the corrosion by acid fumes of some igneous rock, probably andesite. A portion of the superficial layer has encrusted upon it a greenish yellow mixture of sulphur and clay deposited from the sulphurous gases which still emanate from numerous fissures and crater-like openings in the surface of this barren area.

These openings are of two kinds: dry vents from which gases escape into the atmosphere without the association of water, and wet holes which are like large earthen caldrons containing either boiling mud or water. Extending some distance around the orifices of the dry vents there is usually formed an incrustation of beautiful yellow crystals of pure sulphur. The bulk of the sulphur, however, lies in the impure clayey mixture distributed over the surface in irregular patches. An average sample of the crust to a depth of about nine inches yielded on analysis 66.1 % of free sulphur.

The To-od Pequeño is a continuation of the same solfatara, situated to the south of and at a somewhat lower level than the To-od Grande. It exhibits the same phenomena as the upper solfatara but is much smaller in area. In one portion of the To-od Pequeño is a lage cave from the bottom of which issue steam, sulphurous, chlorine and other gases, corroding the sides and roof of the vault and giving to it a varicolored appearance due to the secondary minerals formed. About half a mile southeast of the To-od and separated from it by a high ridge of andesite, is another solfatara called the Pangujaan. It is situated on the southern slope of a slide about 125 feet high and about 300 feet wide, from the sides of which four or five larger and several more smaller vents give off steam and sulphurous gases in a continuous flow. As at the To-od these vents are usually ringed with a sublimate of sulphur, close approach to which, however, is very difficult on account of the precipitousness of the slide as well as on account of the heat and the obnoxious gases given off. Occasionally the channel leading to one of these vents becomes closed and the flow of gases is deflected, in which event the rich sublimate which has formed in the neck and about the mouth of the vent becomes covered over with a subsequent layer of kaolin, forming a hidden deposit of almost pure sulphur.

South and south-west of the two solfataras are two small lakes which drain that region. The smaller of these, called the Malaksan, has low and flat banks, is quite shallow and is about 100 feet long and about 500 feet wide. Its waters are slightly acid and apparently barren of all living matter. The larger and deeper of the two lakes, called the Pangi, is situated about half a mile south of the Malaksan and has high, steep and wooded banks and contains fresh water with an abundance of large fish. The approximate altitudes of the two lakes are respectively 1230 and 1160 feet above the sea level. With the exception of a few occasional fishermen who venture into this country, the entire neighborhood of the solfataras is uninhabited and uncultivated for miles around.

The two most important solfataras on the island of Biliran, which lies just north of Leyte, are located upon the slopes of Mount Guiron. The San Antonio, situated on the western slope at an altitude of about 1100 feet, comprises one pertenencia, and the other, the Santa Rosalia, situated on the eastern slope about 600 feet higher than the San Antonio, comprises two pertenencias. About 25 years ago considerable money was spent in the development of these two concessions, mainly in the construction of roads and pack trails between the solfataras and the two towns of Naval and Caibiran, situated respectively on the west and east coasts of Biliran. Another trail passed over Mount Guiron between the two solfataras making the connecting link in a direct route between the two principal towns of the island. Although still well defined and for the most part easily passable, portions of the trail have become so overgrown that this route across the island has fallen into general disuse.

The San Antonio sofatara in its general aspect is very similar to the To-od, south of Burauen, but is on a smaller scale, possessing an open expanse of only about 250 by 350 feet or about one-fifth that of the To-od. Its surface is pierced by numerous vents, some of them as large as ten feet in diameter, presenting the same phenomena as are exhibited on the To-od. The highest temperature recorded in the examination of several wet holes was 210 F. which is equivalent to the boiling point of water at this altitude. The hot gases emitted from the dry holes made it impossible to approach them close enough to observe their temperature with an ordinary thermometer.

The Santa Rosalia solfatara is situated at the head of the Mapula river, which flows eastward and empties into the Caibiran river near the town of Caibiran. It differs from the San Antonio and the To-od solfataras in that it does not lie upon a barren or comparatively level flat, but covers both sides and the bottom of a low, steep ridge and gully. It differs also in that it is no longer active though apparently but recently extinguished. The Mapulá, which flows about 250 feet below the solfataras, is so highly mineralized as to be unfit to drink, and its temperature in the neighborhood of the solfatara is about 95 F. It is the poorest of the solfataras both in quantity and in quality of the sulphur ore, but that this condition may be due to previous exploitation is likely.

To make a close estimate of the amount of sulphur available in any of the solfataras mentioned is impossible, on account of the irregularity of the deposit in grade as well as in dimension. From such data as may be obtained from a superficial examination alone, it is estimated that about 3,000 tons of sulphur are in sight at the To-od and Pangajaan solfataras, south of Burauen, while at the San Antonio on the island of Biliran, the estimated amount is about 400 tons. The sulphur in sight at the Santa Rosalia is innappreciable in amount.

Of all the sulphur in sight there must be deducted 25 % for losses in mining and treatment of the sulphur ore, which leaves about 2250 tons obtainable at the Burauen solfataras and only about 300 tons at the San Antonio. The proportion of loss in treatment will of course depend on the process adopted, but before deciding upon the method of extraction best adapted to the ores and locality an investigation of the problem of transportation of the refined sulphur from the solfataras to Tacloban reveals the following condition:

Both ponies and carabaos are scarce in the neighborhood and highly valued. Ordinary laborers are obtainable at ₱0.75. It is calculated that it would cost ₱17 to pack a ton of sulphur from the solfataras to Burauen and by analogy to prices paid over similar roads for transportation in other parts of the islands, it is estimated that the cost of hauling the sulphur from Burauen to Tacloban on carabao carts would be about ₱31 per ton. Freight from Tacloban to Manila would cost an additional ₱10 a ton making the total cost of transportation from the solfataras to Manila about ₱58 per short ton. In view of the limited supply of sulphur available, it would not appear advisable to install expensive hauling apparatus to reduce the cost of transportation and As Japanese refined sulphur may be purchased in Manila at about ₱50 a short ton, it is plain that the exploitation of the Burauen solfataras must prove an unprofitable undertaking.

In the case of the San Antonio solfataras on the island of Biliran, the cost of transporting the refined sulphur to Manila would not be nearly so expensive as it would be from the Burauen solfataras. The cost of transportation, including the cost of packing on ponies from the solfataras to Naval, putting the product aboard the boat at Naval, and freight from Naval to Manila, would be about ₱37 per short ton.

Owing to the small amount of available sulphur, the process of extraction adopted would have to be one requiring the least expenditure for plant and naturally, therefore, the least economical in extraction. A calcarone about 25 feet in diameter and about seven feet deep would cost to construct about 400 pesos but the loss in treatment would scarcely be less than 33 % leaving of the estimated 400 tons of

sulphur in sight only 267 tons available of refined sulphur. It is estimated that the cost of stripping, transporting to calcarone, charging and smelting would amount to about ₱3.37 per ton of sulphur produced or about ₱900 for the entire amount available. This sum would pay for the hire of one foreman at ₱3.00 and six laborers at ₱0.75 per day, working for four months, which time would be sufficient, if operations were kept up continously, to extract the entire estimated quantity of available sulphur.

The total investment would then be approximately as follows:

Construction of Calcarone	₱400.00
Stripping and Smelting	900.00
Transportation of Refined Sulphur to Manila	9879.00
Working Tools, Repairs to Trails etc.	600.00
Total	11,779.00
Total Value of Product at the Rate of ₱50.00 a ton	13,350.00

According to the above estimate, therefore, the San Antonio solfatara could be exploited at a profit of ₱1671.00, a margin of profit probably too small to interest anyone but a small investor.

MAURICE GOODMAN.

MINING NOTES

Mr. McDanields, who arrived recently in Manila, brought with him a fine lot of guano from the caves in Tayabas province. There is an excellent market for this fertilizer.

One lot of guano recently sent in from Marinduque, on analysis for phosphorus and ammonia, showed a commercial value of $14 to the ton.

During a recent trip to Olongapo by a member of the Division of Mines, a fine deposit of tripoli was discovered. This deposit is located on the pipe line about one-quarter of a mile from the bay and therefore on the naval reservation.

Tripoli, it will be recalled, is a fairly soft, chalk like rock, but made up of exceedingly fine angular particles of silica. It is one of the best polishing and cleaning substances known. As this is the only deposit of its kind we have found in the Philippines, we make mention of it here. Arrangements might be made with the naval authorities to enable some one to exploit it.

An exhibit of Philippine ores and non-metallic minerals is being prepared by the Division of Mines, Bureau of Science, for the Pacific Commercial Museum, Ferry Building, San Francisco. Two boxes of material together with a set of all publications relating to our mineral industry have already been sent. The Division of Mines desires the co-operation of all operators and prospectors in getting a first-class exhibit placed there. This is one way to "Boost." Besides the above exhibit, the Division is preparing a number of educational sets of important minerals, ores and rocks for future distribution to the larger schools of the islands. To this end we urge the provincial teachers to collect and send in such specimens as they may find, in order that they may be classified and used in these sets.

Mr. H. A. Ferguson, geologist, Division of Mines, who recently returned from an exploratory trip to the Batanes and Babuyanes Islands, North of Luzon, reports a quantity of sulfur in a solfatara, on Camiguin Island. Judging from other solfatara deposits with which he is familiar, he believes there is a possibility of commercial development there.

Messrs. Maurice Goodman and Henry M. Ickis of the Division of Mines have returned from Masbate where they have been executing the primary triangulation on which a complete topographic and geologic map may be based for the Arroyo mining district. The geological work will be done by Mr. Ferguson some time in November. He will be assisted in the field by Mr. Clark who is familiar with the district.

The Division of Mines has invaded Mindanao. An expedition consisting of Mr. Warren D. Smith, acting chief, Henry M. Ickis and Mr. Clark left for the land of the Moros, September 16. Mr. Smith proceeded to Zamboanga and Messrs. Ickis and Clark to Cagayan de Misamis, where Mr. Smith will join them in about a month. The entire party will then proceed through the Lake country to Cotabato, from there to the Rio Grande; then over the Divide to Davao and again proceeding over the Divide to the Agusan River. They will then make their way down the Agusan to Surigao and Placer. This expedition will extend over a period of at least four or five months and much important data on the mineral resources is expected to be the result.

Joseph Pearson, the well known placer mining man from New Zealand, paid a visit to the Division of Mines and is most enthusiastic over the prospect of the development of the mining industry in the Philippines. He is interested in the dredge now in operation at Paracale and declares that he is going home to New Zealand for the purpose of bringing out more dredgers. He had a number of fine samples of free gold with him taken from the tables at Paracale and Malagat. Such views of the prospects as held by a mining man of Mr. Pearson's experience should carry weight.

CURRENT NEW YORK WHOLESALE PRICES OF METALS, MINERALS, CHEMICALS, ETC.

Selected from the Engineering and Mining Journal

		U. S. Currency.
ABRASIVES.—		
Bort, good drill quality	carat	$ 85 00
Carborundum, grains	lb	.10- 17
Corundum	"	.07-.10
Emery, grain	"	.035-.045
Pumice Stone, American powdered	100 lbs	1 60-2 00
ACIDS —		
Hydrochloric 20°	lb	1.25-1.50
Nitric, 38°	"	4 25-4.625
Sulphuric, 66° bulk	ton	18 00
Aluminum, 99%	lb	.36- .39
Antimony, needle	"	10-11
Arsenic, white	"	07½- 07½
ASBESTOS.—		
No. 1, crude	sh. ton	233 00
Fiber No. 2, paper stock	"	17.20
ASPHALTUM.—		
Trinidad	ton	30 00-32.00
California	"	22.50-30 00
Bleaching powder, 35%	100 lb	1 25-1.40
Blue Vitriol	"	7.25
Bone Ash	lb	.02½-.04
Borax	"	.07½- 08
*Caps detonating	M	7 50
CEMENT.—		
Portland, American	500 lbs. bbl	1.55-1.60
Foreign	" "	2.25-2.90
Rosendale	300 " "	.85
*Green Island	375 lb. bbl	2 65
*Alsen		2.75
*Dromedary		2 50
*Rizal		2·50
*Independencia		2.50
CLAY, CHINA.—		
American common	lg. ton	8.50-9 00
Foreign	"	11.50-17.50
COALS.—		
Japanese		5.75
Australian		6 00
Copper	lb	.215-22
*Dynamite 40%	"	.20
Feldspar ground best	sh. ton	14 00
Fire brick American	M	30.00-40.00
Imported	"	30.00-45.00
Fire clay, St. Louis Mill	ton	2.50
*Fuse-Blasting	1,000 ft	7.50
Graphite-American ore, common	lb	.01.10
Artificial	lb	.06
Guano	sh. ton	
Gypsum-Fertilizer	sh ton	7 00
Powdered	sh. ton	10.00
Lead	lb	.05.05½
Magnesite-Greece, crude, 95%	lg. ton	7.00-8.00
Bricks, domes	per M	160-200
Manganese, pure, 98-99%	lb	.75
Ore, 80-85%	sh. ton	35.00-60.00
Mercury, export flask	75 lbs	41.00 42.00
PAINTS AND COLORS.—		
Litharge American P'w'd	lb	.07¼-.07¾
Ochre, Am. Com	sh. ton	8.50-9.00
Paris green, pure, bulk	lb	.26
Turpentine, spirits, bbl	gal	.60½
White lead, Am. dry	lb	.06¾- 07
Am. in Oil	"	.07¼-.07½
Zinc, white, Am. extra dry	"	.05⅝-.05½
Phosphates, Acid	per unit	.65- .67½
Florida hard rock	lg. ton	10.25-10 50
Land pebble 68%	"	5 75-6.00
Potassium Cyanide (98-99%	lb	18 -.19
Platinum	oz	26.00-28.50
*Powder, black blasting A	lb	.15
*Judson	"	.13½
Pyrite, Domestic Non-arsenical, lump	unit	.11- 11¼
Imported non-arsenical lump	"	.13-.14
Imported, arsenical	"	.12½-13
Saltpeter crude	100 lbs	4.25-4 50
Silica, Lump quartz	lg. ton	2 50-4 00
Ground quartz, ordinary	"	13 00-15.00
Glass sand, ordinary	"	2 75
Silver	oz	.67½
Sodium cyanide (100% KCN)	lb	.18-.19
*Steel, octagon drill	lb	.14
Sulphur, Louisiana prime	lg. ton	22.12½
Roll	100 lbs	1 85-2 15
Flowers sublimed	"	2.20-2 60
Talc—Domestic	sh. ton	15 00-25 00
Italian, best	"	35 00-40.00
Tin	lb	.40¼
Zinc, metallic ch. pure	"	.15
Dust	"	.05½-.06½

*Manila quotation.

NEW SMELTING PROCESS

Consul O. H. Baker, of Sydney, Australia, forwards a supplemental report on the Moore-Heskett process of producing iron and steel from ore without reduction to pig iron. He states:

My preliminary report, in Daily Consular and Trade Reports of January 29, concerning the new smelting method, awakened a very great interest throughout the United States, as I have received numerous letters asking for further particulars explaining the process.

In a communication from the manager of the company I am informed that a demonstration of the process is being carried out on commercial lines in the presence of and under the direct supervision of six experts, including the consulting engineer to the Queensland government. It is claimed that these experts saw the furnaces empty, had the ore for treatment prepared under their supervision, and the furnace started in their presence, one of them remaining at the works to supervise operations throughout the whole run.

SAVING EFFECTED—RESULT OF TEST

Mr. Henry C. Stanley, consulting engineer to the Queensland government, who visited the plant for the purpose of demonstrating the success of the patent, says:

"I spent some time in examining the plant in question and watching the process in actual operation and am satisfied that it attains the object claimed for it by the inventors. The plant having been erected for experimental purposes is, of course, on a comparatively small scale, but I am informed that it is capable of turning out 10 tons of malleable iron or steel per diem. This being the case it would seem to be of sufficient size to test the practical value of the process, and might therefore be applied to a plant of any desired capacity with equally satisfactory results.

"At the time of my visit the ore being treated was some of the New Zealand magnetic iron sand, but the inventors assert that it is effective in treating any ferruginous ore, provided the same is pulverized in the first place—an operation which can be readily done by mechanical means at small cost. It is unnecessary for me to recapitulate in detail the different steps of the process, but I was satisfied from what I observed that iron and steel can be made by it in an economical manner and of the best quality.

"I had no opportunity of verifying the figures given as to saving in first cost of the plant and the comparatively small amount of labor necessary to operate it, but I see no reason to question their correctness. The economy in first cost of installing the machinery, which is stated to be only one-fourth that required by the present method of smelting, as well as the 25 per cent saving in operating expenses, shoud lead to its general adoption and result in the financial success of the company. With regard to the quality of steel produced, I may say that when recently in Brisbane I was enabled, through the courtesy of the chief engineer of the Queensland railways, to test a bar of mild steel in the testing laboratory attached to his department. The tests gave most excellent results and were quite equal to the requirements of the standard specifications for steel used in bridge girders and for other structural purposes. The tests were as follows: Tensile strength, 32.78 tons per square inch; elongation in length of 8 inches, 30 per cent; contraction in area, 50 per cent; and apparent limit of elasticity, 20.79 tons.

FAR EASTERN ENGINEERING, CONSTRUCTION, COMMERCIAL AND FINANCIAL NEWS

LEECTRIC RAILWAYS, LIGHTING, POWER, TELEGRAPH LINES, ETC.

SUNGARI RIVER CABLE.—Russia has turned over to the government of China the complete control of the telegraph system and Sungari river cable.

TOKIO'S CIRCULAR RAILWAY.—The Japanese government has decided to run electric passenger cars on the railroad that encircles the capital, but all freight will be carried by steam trains for the present.

BAKAN ELECTRIC TRAMWAY.—The Japanese Department of Home Affairs has given permission for the construction of the Bakan Electric Tramway which will run between Shimonoseki and Akama and four other branch lines, the total mileage being 7 miles and 70 chains.

BORNEO WIRELESS SYNDICATE.—A company has been formed with a capital of 2,650,000 florins for the purpose of establishing a wireless telegraph system between Java, Celebes, Borneo and the neighboring islands. It is understood that the Dutch Indian government has granted a concession to the company.

RAILWAY TO BAGUIO.—The Speyer Syndicate is reported to have agreed to build an electric line from Camp One on the Benguet road to Baguio provided that the War Department agree to establish a brigade post at the Philippines summer capital. This line will connect Manila by rail via Dagupan and Camp One with Baguio.

ELECTRIC RIPENING OF FRUIT.—Ripening of fruit by electricity is one of the latest achievements of science. The ripening experiments have been tried for the most part with bananas, and have proven this fruit may be ripened as wanted for shipment, simply by regulating the lights. This is an immense advantage to shippers over the ordinary methods.

ELECTRIC LIGHT IN PEKING.—The Taohua Electric Light Company has filed a protest against any foreign concern installing electric light outside the Legation quarters in Peking. The Dutch Minister to Peking the doyen of the diplomatic corps, has advised the Waiwupu that the matter shall be reported to the home governments of the foreign ministers.

LIGHT AND WATER POWER COMBINE AT TOKIO.—Negotiations are being carried on between the Tokio Electric Light Co. and the Katsuragawa Water Power Co. looking to the amalgamation of the two companies. Both companies secure their respective motor power from the common fountain at Otsuki and the amalgamation is expected to reduce the cost almost one-half.

INDIA'S FIRST ELECTRIC RAILWAY.—The first Electric Railway in India will, in all likelihood, be the Nilgiri Railway with its new extension from Coonoor to Ootocamund. A scheme for the electrification of the line has been investigated by the Madras Government which purchased the undertaking two years ago and the question of the expenditure involved in carrying out the proposed scheme is now under the consideration of the authorities.—*Railways.*

MELBOURNE ELECTRIC TRANSPORTATION.—Hon. Thomas Bent, in a recent address to a number of British capitalists interested in electrical industries in Australia, says the London Times, remarked that one of the objects of his visit was to arrange for the electrification of the suburban lines running from Melbourne. The State was prepared to expend $15,000,000, but he had found great difficulty in coming to any decision as to which particular system to adopt. Those present were interested in Mr. Bent's assurance that British capital, whether invested in electrical enterprises or anything else in the State of Victoria, was absolutely safe,and that they could be satisfied that no socialistic legislation would injure their investments.

RAILWAYS AND RAILWAY SUPPLIES

KUANGSI RAILWAY.—The survey of the Kuangsi railroad route has been ordered. It will begin at Wuchow.

AMUR RAILWAY.—The opening ceremonies incidental to the initial work of construction of the Amur railway were held at Srotensk, July 18.

YOKOHAMA BELT LINE.—The short line connecting the Yokohama railway station and the Yokohama customs will be in operation in July 1908.

SHANHAIKWAN-NEWCHWANG EXTENSION.—The Japanese have made a vigorous protest against the extension of the Shanhaikwan-Newchwang railway beyond Hsinmingtung.

BANGKOK AUTOMOBILE GARAGE.—A Belgian Company has been formed with a capital of 1,000,000 ticals (30 cents) for the purpose of establishing an up-to-date garage at Bangkok.

SHANTUNG RAILWAY EXTENSION.—Germany has asked the Peking government for permission to extend the Shantung line of railway into the interior of China by way of Honan.

KWANSI RAILWAY CO.—A company with a capital of ₱15,000,000 known as the Kwangsi Railway Co. has been organized to construct railways in the Chinese province of that name.

EAST INDIAN RAILWAY EXTENSION.—The survey of a line 50 miles in length, connecting Sainthia with Berhampore by way of Kandi, is being carried on by the East Indian Railway.

WEIHSIEN-CHEFOO RAILWAY.—The Peikng government has authorized the construction of the Weihsien-Chefoo railway connecting the cities of Weihsien, Huanghsien and Chefoo.

DELI-PALEMBANG RAILWAY.—A railroad in Sumatra connecting Deli on the east coast with Palembang on the south is now being surveyed under the direction of the Netherlands India Government.

PUNTUNG RAILWAY.—The first section of the Puntung railway in Shanshi has been surveyed and construction work will be pushed as rapidly as possible. This road will tap the wealthiest sections of China.

YOKOHAMA RAILWAY.—The construction of the railroad between Yokohama and Hachioji will be completed before the end of the year. The management announces that traffic over the road will begin January first.

KASHGORIA RAILWAY.—The Russian government has made application for a franchise for a railroad between the New Dominion of China and Kashgaria. The Chinese are making a strenuous objection to the granting of this privilege.

SAGHALIEN RAILWAYS.—The Russian government has appropriated about 2,500,000 roubles to be expended in the construction of a light railroad to the mines at Vladimir and for a railroad in connection with collieries near Zuisky.

MUKDEN-ANTUNG RAILROAD.—It is the purpose of changing the route of the Mukden and Antung railroad between Fengwengcheng and Mukden on account of the difficult nature of the country and in addition to double track the entire road.

MANILA RAILWAY.—The traffic receipts of the Manila Railway for the week ending August 6 inst. were $42,693 (including extensions, 207 miles open), against $32,466 (main line only, 127 miles open) for the corresponding week of 1906; making an aggregate of $1,334 434, against $964,457 for last year.

BURMAH RAILWAYS CO.—Five locomotives and tenders are in course of construction in the shops of Messrs. Robert Stephenson & Co., Darlington, for the Pegu-Moulme in extension of the Burmah railway. A dozen platform weighing machines have also been ordered from the firm of Messrs. W. T. Avery Co.

DAMAGE TO MANCHURIAN RAILWAYS.—Heavy floods damaged many bridges between Tairen and Tashihkiao and interrupted traffic early in the month of August. Similar damages were sustained between Mukden and Antung and on the ultra-mural road north of Shanhaikwan The repair construction promises to provide against a recurrence of damages by floods.

PEKING JEHOL RAILWAY.—It has been decided to build the proposed line with Chinese government funds or rather from the net profits of the Imperial Railways of North China. The new line will be known as the Ching-Ie Tieh-lu railway. Construction will begin as soon as the Peking-Kalgan line is completed. The Peking-Kalgan line is costing Tls. 7,500,000.

KIUKIANG-NANCHANG RAILWAY.—The construction of the Kiukiang-Nanchang Railway is reported to be progressing very slowly on account of lack of funds. The director general of the road made a trip over the road recently ostensibly to inspect the bridge construction on the different lines under his direction. The officials of Kiangsi have been asked to give their assistance in solving the financial problems involved.

TOKIO RAILWAY EXTENSIONS.—The following additions to the Tokio Tetsuda Kaisha will very probably be completed by the end of the present year:

A line from Minami-jimbo-cho in the Kanda Ward passing by the Koishikawa Arsenal, to Hakusan-maye.

A line from Hongo, Shichome, by Tabsaka, past the front of the Denzu-in Temple in Koishikawa, down Ando-zaka, and thence from the Yodo-gawa to Omagari.

A line from Omagari to Yodo-kawa Bridge.

A line from Shinano-machi in Yotsuya Ward to join the Shinjuku road at Shichome.

PUBLIC AND PORT WORKS, DOCKS, WHARVES, ETC.

HARBOR WORKS AT TUNGCHOW.—The works of the port of Tungchow, up the river, have been completed.

TYTAM PUMPS INSTALLED.—The powerful pumping engines have been installed for the Hongkong waterworks extension.

FORMOSAN HARBOR IMPROVEMENTS.—The Formosan government is preparing plans for the improvement of the harbor of Takao. It is estimated that over a million yen will be expended.

YOKOHAMA GAS WORKS EXTENSION.—The Yokohama city legislature has authorized the issue of bonds to raise the sum of 600,000 yen to be spent in extending the gas works in that city.

HUANGPU RIVER DREDGING.—The East Asiatic Dredging Co. have commenced work on their contract to dredge the Huangpo river. The work on the new breakwater is also progressing.

PORT ARTHUR HARBOR IMPROVEMENTS.—The Japanese are preparing estimates on the dredging of the western anchorage inside the harbor at Port Arthur so as to make it available to large vessels.

TANJONG PAGAR DOCK IMPROVEMENTS.—The dock board has decided to advertise for tenders for a large extension to the docking facilities which it is estimated will cost in the vicinity of $10,000,000 gold.

DREDGING SYNDICATE FORMED.—A company with a capital of a million taels has been formed at Peking for the purpose of securing the contract for the dredging of the waterways between Paoting and Tientsin.

MOJI DOCK CO.—According to the Osaka Jiji, the capital of the proposed Moji dock company is to be seventy million yen of which ten million yen is to be paid in by the French and Belgian syndicate in November.

NANKING IMPROVEMENTS.—The foreign settlement at Nanking, which embraces an area of about one-quarter of a mile square is neatly divided by four wide streets built of concrete and cement, These streets are 32 feet wide.

PROPOSED SHIPYARD AT FUKIEN.—Japanese and Chinese capitalists are said to be interested jointly in the establishment of an extensive shipbuilding plant at Fukien for the purpose of constructing all the vessels for a new Chinese navy.

PUBLIC WORKS IN NORTHREN SAGHALIEN.—The Russian department of commerce has approved the appropriation of over a million rubles to be expended in harbor construction work at Alexandrovsky. It is expected that work will commence early next year.

MANDALAY WATER SUPPLY.—The municipal authorities at Mandalay are endeavoring to solve the problem of water supply. The investigation now on includes the consideration of a reservoir in the hills to supply water by gravitation, deep wells or a scheme to secure the supply from the river.

CANAL TO CONNECT TOKIO AND YOKOHAMA.—Prominent traders of Yokohama propose to make a canal between Yokohama and Tokio for the transport of merchandise. The promoters have established a temporary office at South Maka-dori, and appointed Mr. J. Inouye, a civil engineer, to investigate the route between the two cities.

SAMARANG HARBOR IMPROVEMENTS.—The business men of the port of Samarang, Java, have petitioned the government for an appropriation to be spent in dredging the harbor at that point and increasing the size of the custom house at that point. The harbor has been slowly silting up and owing to neglect has become quite shallow in many places.

PEKING WATER WORKS.—The Chinese government has decided to appropriate the money necessary for the installation of a modern water work system at Peking. The work will be carried on under the direction of Chinese officials and the order for the necessary supplies and machinery will be placed in Germany. This action on the part of the Peking authorities was taken in order to eliminate foreign applications.

SUNGEI PINANG RECLAMATION.—The Public Works Department of the Straits has submitted the following estimates for 1907:

Sungei Pinang, Strengthening River Wall, South, $50,500
Sungei Pinang, Strengthening River Wal, North, 32,500
Sungei Pinang, Rubble Wall and Reclamation, 28,000

It is believed that these works will cost in the neighborhood of $300,000 before completion. The original estimate was $150,000 but the serious subsidence of the filling has almost doubled the cost of the work.

SHIPBUILDING, GENERAL MARINE, SHIPBUILDING, ETC.

TREMONT AND SHAWMUT SOLD.—The Pacific Mail has purchased these two big vessels from the Boston Steamship Co.

OSAKA SHOSEN BUYS CANADIAN PACIFIC VESSELS.—The report of the sale of the Athenian and the Tartar by the Canadian Pacific to the Osaka Shosen is in circulation at Tokio.

KAWASAKI DOCKYARDS BUILDS GUNBOAT.—The Chinese Government has ordered from the Kawasaki Shipbuilding Yard, Kobe, the construction of a gunboat. The cost is said to be *yen* 1,400,000.

YOKOHAMA-CALCUTTA LINE.—The Indo-China S. N. Co. has arranged for a direct steamer service of three modern vessels between Yokohama and Calcutta by way of Kobe, Moji, Hongkong, Singapore and Penang. These steamers will run in conjunction with the Apcar line.

NEW BLUE FUNNEL FREIGHTERS.—The Blue Funnel line will add four new freighters of 10,000 tons gross each to the Liverpool-Victoria route. The vessels, when completed, will be 550 feet long, 58 feet beam and 42.6 feet deep. These vessels will follow the example of the other vessels of the Blue Funnel vessels and call at all the different ports in the Orient as the demand may require.

NEW VESSEL LAUNCHED.—The Kagi Maru built by the Kawasaki Dockyard Co. was successfully launched at Kobe and is a credit to the contractors.

The vessel is a single screw steel spar-deck steamer of 2,500 gross tonnage. It is 300 ft. long, 31 ft. in breadth, and 24 ft. in depth, and is capable of accomplishing 14 4-5 knots. There are 20 first-class cabins, 32 second-class, and there is accommodation for 260 third class passengers.

The Kawasaki Dockyard Co. has the contract for three more vessels of 6000 tons each to be built for the Osaka Shosen Kaisha which will be placed on the American run.

CONCRETE IN STEAMER REPAIRS.—Concrete has come into use in connection with steamship repairs. The Iron Age declares that it was successfully employed to patch up the hull of a steamer. She struck on a jagged rock, and several holes were made in the iron hull of the vessel. The largest one was about 80 feet from the bow, and it measured about 35 feet in each direction, and through this great gap came the rock, projecting for nearly 11 feet into the hold. Those responsible for the salvage operations managed to patch up the breach by means of concrete, and, although leaks developed, the water was pumped out of the hold and the ship was towed 40 miles to a dry dock.

SVENSKA OSTASIATISKA KOMPANIET.—The Belgian Legation in Stockholm report that a company has been formed with a capital of 6,000,000 kroner (about £333,000), to establish a direct service of steamers between Sweden, China, and Japan. An agreement has been concluded between this company, which is entitled "Svenska Ostasiatiska Kompaniet" and the "Ostasia tiske Kompagni" of Copenhagen, according to which each company will run four steamers of from 6,000 to 8,000 tons to China and Japan, starting alternately. The steamers will touch at some European port and at Port Said, Colombo, Penang, Singapore, Hongkong, Shanghai, Vladivostock, Yokohama, Kobe and Moji; the same freight rates will be charged from Gothenburg as from Copenhagen and Hamburg. It is expected that this new service will stimulate the exports from Sweden to the Far East, which are at present estimated at 50,000 tons a year, mainly iron and steel, machinery, cement, matches and paper. The Swedish Diet has voted a subsidy to the "Svenska Ostasiatiska Kompaniet."

MINES, MINERALS, AND THE METAL TRADE

RICH TIN STRIKE.—Kula Kerling in the Ulu Selangor district is the scene of a remarkably rich strike in tin covering an area of over 200 acres.

TIN REFINING IN HONGKONG.—Chinese tin to the amount of 5,000 tons from the mines at Mongtze, Yunnan, passes through the Hongkong refineries, annually.

IPOH TIN MINES.—The Chendai Lode Syndicate operating near Ipoh has developed two large lodes and the syndicate has decided to install a five-head battery.

MANCHURIAN FLOUR MILLS.—A syndicate of five flour mill companies, consisting of the Sungari, Manchiurian and three others, has been concluded at Kharbin.

MINING CONCESSION OF JEHOL.—The Lieutenant Military Governor of Jehol, Ting Chieh, has signed an agreement granting a mining concession in Jehol to a British merchant named Ede.

DREDGES FOR TIN MINING.—An order has been placed by the Malacca Tin Dredging Co. with Messrs. Riley Hargreaves & Co., Singapore, for the construction of a large and powerful suction dredger.

TONGKAH TIN MINES.—The Chersonese Syndicate has decided to proceed to the development of the Taimuang mine, one of the most important of the properties controlled by the syndicate in the western Siamese States.

MURORAN STEEL FOUNDRY RECLAMATION.—Mr. Hashimoto of Sendai has been awarded the contract for the work of reclamation and levelling in connection with the Muroran Steel Foundry. The price submitted was 1,440,000 yen.

THIBETAN MINES.—Several mineral experts have been sent to Tachinlu on the Thibetan border by the Chinese resident at Thibet for the purpose of prospecting that territory and report on the extent of the mineral wealth and the most desirable means for its development.

ANGLO-JAPANESE STEEL WORKS.—The contract between the Hokkaido Colliery S. S. Co. representing Japanese capital and Messrs. Armstrong and the Vickers-Maxim Co. representing British capital for the joint establishment of a large steel works at Hokkaido has been signed.

EASTERN SMELTING CO.—A company having a capital stock of $1,250,000 was recently registered at Penang and has for its purpose the establishing of a smelting plant in the Straits Settlements. The company has asked the F. M. S. government for permission to export ore from the Federated States.

FORMOSAN IRON AND ENGINEERING WOKRS.—The Formosan Iron and Engineering Works, (Ltd.) with a capital of $500,000 gold has been organized in Tokio and will install a large plant in Southern Formosa. The greater part of the stock has been subscribed by the owners of the Formosan sugar mills.

ELECTRIC SMELTER AT HANAU.—A new electric furnace, for determining the fusion of refractory substances, has been constructed at Hanau by W. C. Heraeus. Its essential part is a tube of iridium four-fifths in diameter, and in this temperatures between 1,500 degrees and 2,000 degrees Celsius can be maintained for any desired length of time.

BORNEO COAL.—Development work on the coal deposits of the Breow River, Dutch Borneo, is reported to have established the reputation of the product, and several syndicates are being formed to make further explorations. Expert reports announce that the coal is better than Australian and far superior to Japan coal. Steamship companies in the Far East are greatly interested in the outcome.

OPENING OF A NEW COPPER MINE.—According to a joint memorial from Viceroy Tuan Fang and Governor Jui Liang, permission has been given for the working of a well-known copper mine in the district of Kanchow, in Kianghsi, with a capital of Tls. 500,000, which is to be equally contributed by the Provinces of Kiangsu and Kianghsi. The output will be used for coining and other purposes in the two provinces.

NORTH KYUSHU COLLIERIES.—The output of the Chikuho colliers during the first half of this year amounted to 3,268,713 tons; an increase of 314,063 tons over the quantity during the corresponding period of last year. The monthly returns for this year are as follows:

	Tons
January	544,522
February	428,702
March	575,917
April	557,522
May	579,572
June	582,478

FINANCIAL AND MISCELLANEOUS

CHINESE TONGSAN CEMENT WORKS.—The works are being enlarged and reorganized.

JAPANESE TOBACCO MONOPOLY.—The Japanese Resident in Seoul is making arrangements to extend the tobacco monopoly to Korea.

NIPON BIJUTSU KOGEI KAISHA.—A company has been formed in Japan under this title with a capital of two million yen for the purpose of manufacturing objects of arts.

FORMOSAN EXCHANGE ORGANIZED.—The Tainan Rice Sugar and Stock Exchange has been organized by Japanese merchants at this important port in Formosa with a capital of 300,000 yen.

ONODA CEMENT CO.—This company has decided to increase its capital to yen 1,000,000 and in conjunction with the Mitsui Bussen Kaisha proposes to establish a factory in Manchuria.

ENSUI SUGAR CO.'S LOAN.—The Ensui Sugar Manufacturing Co. at Tainan, Formosa, has received advices from London that a loan of yen 900,000 had been floated for the company.

WATER COMPANY AT SWATOW.—The acting viceroy has given his consent to the petition recently presented to him by the people of Swatow asking permission to establish a Water Company.

JAPAN'S NATIONAL DEBT.—At the end of July, the total amount of Japan's national indebtedness was 2,312,943,462 yen, of which 1,051,188,602 yen are domestic and 1,261,754,860 yen foreign loans.

JAPANESE HEMP MANUFACTURING CO.—The first meeting of the Imperial Hemp Manufacturing Co. was held recently at the Bankers' Club for the purpose of considering amalgamation with the Nippon Seima Co.

JAPANESE POTATOES.—The cultivation of potatoes has been lately in vogue in various prefectures and greatly increasing. An amount of 400,000 yen was exported last year. The crops this year are especially good.

SAPPORO LUMBER CO.—The establishment committee of the Sapporo Lumber Company, of Japan, promoted by Mr. H. Nakazawa and many other persons, with a capital of 6,000,000 yen, has decided to decrease its capital to 1,200,000 yen.

JAPAN CHINA BANK.—A plan is on the tapis to establish a banking corporation under the name of the Japan-China Bank by Messrs. S. Ito, S. Uchimura and others with a capital of 5,000,000 *yen*. The head office is to be established at Kobe, a branch office at Tairen.

VOLCANIC ASHES FOR CEMENT.—A large trade is being done in Japan in volcanic ashes. The ashes, which are used as a substitute for cement, are supplied in great quantities to the Mitsu Bishi and Kawasaki Dockyards, the Sasebo Naval Yards and foundries and factories all over the country.

TAPIOCA MILL IN SIASI.—A company comprised of American capitalists has been organized to develop the islands of the Siasi group off Mindanao. A plantation will be opened up on the island of Lapac and trading stores on each of the different islands. A tapioca mill will also be installed.

RAILS FOR MANCHURIA.—The first consignment of American steel for Manchurian railways was shipped on the British steamer *Askehall* from New York, July 20. Forty steamers have been chartered to carry the total purchase of 40,000 tons of material by the Japanese government and the cost is estimated at $10,000,000.

WEAVING COMPANIES AMALGAMATE.—The negotiations for amalgamating the Nippon Hemp Weaving Company and the Hokkaido Weaving Company have been settled between the Directors on both sides. Extraordinary general meetings of the two companies will be held shortly to obtain the shareholders' approval.

TIMBER BUSINESS IN MANCHURIA.—The negotiations between Japan and China on the timber business in Manchuria are not yet concluded. Japan proposes to include the Tangchiakiang in the area of the concession but the Chinese authorities are against the proposal as that river has no connection with the Yalu.

SIBERIAN BUTTER.—At a recent conference of exporters of Siberian butter, it was stated that for 1907 an export from Siberia to the West of about 3,600,000 pounds of cream butter (approximately sixty million lbs. avoirdupois) was anticipated, or about 1,500,000 pounds (about twenty five million lbs.) more than last year.

NEW SOUTH WALES RUBBER.—The following company has been registered in New South Wales:—

Oceanic Rubber Planting and Trading Company, Limited, capital £10,000 in £20, shares, to acquire the business of A. E. and Charles Harland, planters and traders, in the Banks group, New Hebrides, etc. Office: Sydney.

FLAX MANUFACTURING TRUST.—The amalgamation of the Hokkaido Flax Manufacturing Co. with the Japan Flax Manufacturing Co. has been effected. For this purpose both companies held extraordinary meetings of shareholders at the Geological Association, Kyobashi, and the Banker's Club respectively. The formal contracts were exchanged between both parties.

TOYO CEMENT CO.—The Toyo Cement Company (which was organized with a capital of 10,000,000 yen by amalgamation with the Saga, the Kyushu, the Miye and the Okayama Cement Company which were already conducting business, and also with the Tokoku and the Manshu Cement Companies, which were under organization) has decided to decrease its capital by 5,000,000 yen.

TOYO ZINC COMPANY.—A general meeting of the shareholders of the Toyo Aen Kaisha (zinc company) with 3,000,000 yen capital, which is being promoted by a number of prominent businessmen with Baron Shibusawa as Chairman of the Establishment Committee, will be held on May 13 to obtain approval of the shareholders to wind up the company. The expense incurred for organizing the Company will be borne by the promoters.

SUGAR TRUST IN JAPAN.—As the result of the amalgamation of the Dai Nippon Sugar Refining Company with the Dairi Sugar Refinery, the former Company has decided to float 3,000,000 yen debentures under the guarantee of the First Bank and the Japan Credit Mobilier. The rate of interest will be 7 per cent per annum, the price of issue 97 yen, and the period of redemption seven years after remaining unredeemed for the first three years. The date of issue is still undecided.

DALNY'S POPULATION.—The population of Dalny, according to a police census taken in December, 1906, is given as 23,483. The returns show that there are 1,762 Japanese shops, stores, and firms there, of which about 200 may be classed as firms, and of these probably 50 are large, reliable, and of some prominence. The Chinese shops, stores, and firms are placed at 908, though influential Chinese firms do not exceed one dozen. There are also three British and American firms, branches of houses already established in China and Japan.

DOCKAGE RATES AT TAIREN.—The South Manchurian Railway Co. has fixed the Tairen dockage as follows:

Gross tons.	Within 3 days. Yen.	Per day from 4th day. Yen.
Below 300	500	50
300 to 400	530	55
400 to 500	560	60
500 to 600	590	65
600 to 700	620	70
700 to 800	650	75
800 to 900	680	80
900 to 1,000	710	85
1,000 to 1,100	740	90
1,100 to 1,200	770	95
1,200 to 1,300	800	100
1,300 to 1,400	830	105
1,400 to 1,500	860	110

Every ton above 1,500 tons is charged at the rate of 50 sen for the first three days and five sen per day from the fourth day.

MANCHURIAN DEVELOPMENT.—Consul-General W. D. Straight, of Mukden, writes that the commissioner of customs at Mukden, in a recent report to the Viceroy, calls His Excellency's attention to the fact that in their freight tariff the Japanese railway authorities discriminate against the Chinese port of Newchwang in favor of Dalny. In order to create healthy competition in the carrying trade the commissioner recommends the following:

(1) The imperial railways of north China be extended from Hsinmintun to Fakumen, a distance of 160 li (53 miles), and later continued north to Tsitsihar, the capital of Heilungchiang province, thus affording winter transport to Chingwantao or some other ice-free Chinese port to be hereafter established for the grain produced in the west Liao region. It will otherwise be necessary to store this produce in Fakumen, Tungchiangtzu, or Hsinmintun for shipment to Newchwang when the river opens in the spring, or to haul the grain to Tieling or some other point on the railway, whence it would probably be exported through Dalny.

(2) The Liao River be conserved and that a company be organized to operate light-draft river steamers.

(3) The repair of the cart roads between Fakumen and San Mien Chuan (on the Liao), Tieling and Mafangkou, and Changtu and Tungchiangtzu. Post-roads such as have been constructed in Chihli province are suggested as models, there being no necessity for attempting elaborate road building in this region.

The viceroy has referred the recommendations to the various departments of the provincial administration and requested them to report on the means by which they may best be carried into effect. An official has already been dispatched to Japan to study river conservancy.

JAPANESE LUMBER IN AUSTRALIA

Consul-General J. P. Bray, of Melbourne, reports that a few months ago the first cargo of Japanese lumber ever shipped to Australia was landed in Melbourne and met with such a ready market that a further shipment has just arrived and there seems every probability of a permanent business being established. The cargoes consist of pine, oak, ash, and basswood, in logs of various sizes squared by the ax only, and, it is said, can be landed in Australia at a lower figure than other imported lumber.

AN EXTRAORDINARY RUBBER TREE

One and a half pounds of dry rubber per month from a 16-year old Para tree sounds fabulous and ought to water the mouth of our great Rubber magnates of this Island, says a writer in the *Ceylon Morning Leader*. So it is and we have it from good authority that a 16-year old Para in Dea Ella Estate, Galapedera, yielded this average per month during last year's tapping. This special tree which has not much of a girth for its age, branches off beautifully about 5 feet from the ground and stands on gravelly soil. The system of tapping adopted was the usual full-herring bone and it has been very lightly tapped every other day. The flow of latex during the tapping had been so great that it required the services of a special cooly and an unusually large cup has had to be placed to receive the extra latex during the nights. The Superintendent of this estate uses a special knife invented by him; it gives a clean cut and does not pierce into the cambium. The knife in fact is a safety one and can be put into the hands of any ordinary laborer without danger to the tree. Any further particulars needed have been kindly promised by the Superintendent of this estate to anyone who is willing to communicate to him.

DISCOVERY OF PEARLS IN KAMSCHATKA

It is reported from Dalyokaya Okraina (Vladivostock) that a Russian quite accidentally succeeded in finding traces of pearls in Kamschatka. Guided by Kamschadales he penetrated into the depth of the peninsula, between 250 and 370 versts from the sea coast. Reaching the mouth of a tributary of a tortuous river, he discovered shells containing pearl. In one day he collected 94 shells. Not having time for the continuation of the work, he then left Kamschatka. Being in Vladivostock he obtained an analysis of the shells, and found a remarkable river milk-colored, dull pearl, valued by local merchants at five roubles each, on an average.

AUSTRALIAN FLOUR IN CHINA

Vice-Consul-General S. J. Fuller, of Hongkong, reports that the American flour merchants in that city understand that unusually large contracts have been placed for Australian flour to be delivered in Hongkong. These contracts are understood to total more flour than has ever before been contracted for in Australia for the Hongkong market, and estimates ploce the total amount at from 300,000 to 500,000 bags, while it is stated that 80 000 bags is the largest that has been under contract at any one time in the past. The reason given for the ability of the Australian millers to secure this business is that the American mills are now and have been for some time unable to make deliveries.

INVESTMENTS IN JAPAN

Consul-General H. B. Miller, of Yokohama, reports that the total capital subscribed to the stock of the new companies organized in Japan during the month of March amounted to $11,995,000, while the increased capital of old companies during the same period amounted to $23,173,800.

Of the new companies organized during March, the capital of the banks aggregated $960,000; cotton mills, $262,500; railways, electric, and tram, $650,000; manufactures, $2,750,000; mining, $1,500,000; commercial and miscellaneous, $5,085,000; marine, $1,050,000, and electric power, $100,000. During the month old banks increased their capital by $10,861,300; manufacturers, $150,000; insurance, $2,650,000; mining, $2,500,000, and commercial and miscellaneous, $6,650,000.

During the twenty months ended with February, 1907, the amount of capital subscribed to new Japanese companies was $553,574,900, while the increased capital of the old companies amounted to $229,427,365. Of the new companies organized, the aggregate capitalization of the banks amounted to $17,380,000; cotton mills, $16,676,500; electric, $58,992,500; mining, $30,260,000; marine, $13,862,500; railways, $159,100,000; manufactures, etc., $161,903,400; navigation, $20,900,000; insurance, $16,850,000, and commercial, etc., $57,650,000. The increase of old companies during the twenty months were: Banks, $36,564,675; cotton mills, $20,902,715; electric, $17,680,000; mining, $9,575,000; marine, $805,000; railways, $56,089,900; manufactures, etc., $49,298,500; navigation, $4,200,000; insurance, $9,925,000; commercial, etc., $24,386,575; total subscribed and increased capital, $783,002,265.

PHOTOGRAPHY AND MINING

An exchange reports the invention of an apparatus for securing negatives of the strata exposed by the drill in testing mining properties.

The invention consists of a camera enclosed in a water-tight tube, provided with a window and reflectors, and lowered down the hole by a suitable cable. The exposures are controlled by electricity, and accurate photographs of the varying strata through which the drill has passed can be obtained. Much of the information given by colors or differences in light and dark surfaces is lost in the photograph, but from the crystalline structure of the ore, positive information as to its nature can be obtained, and the detection of the juncture with the rock is possible.

OFFICIAL

OFFICE OF THE SECRETARY OF COMMERCE AND POLICE.

Manila, P. I., August 23, 1907.

SEALED PROPOSALS, in triplicate, will be received in the office of the Secretary of Commerce and the Police, until 23rd day of September, 1907, at four o'clock p. m., then and there to be publicly opened, for a concession to construct a railroad from San Fernando, province of Pampanga, to Arayat, in the same province, a distance of approximately nine (9) miles.

The proposals shall specify the nature of the concession desired, includng:

1. The motive power to be used.
2. The style and type of railroad.
3. The weight of rails.
4. Section of roadbed.
5. Nature and extent of privileges for using public highways.
6. General style and amount of equipment to be used.
7. The exact route of the proposed railroad
8. Extent of expropriation privileges asked for
9. What concessions other than strictly railroad, such as electric light, heat or power systems, are asked for in addition to the railroad franchise.

Proposals shall be made subject to such other terms and conditions as may be subsequently determined upon by the Philippine Commission, the bidder having the right to withdraw his bid should the terms and conditions proposed by the Philippine Commission prove unsatisfactory.

Proposals shall be accompanied by ten thousand (₱10,000) pesos in cash, or a certified check for that amount.

The right is hereby reserved to reject any or all proposals or waive any defects.

W. CAMERON FORBES,
Secretary of Commerce and Police.

HEMP STATISTICS, 1st SEPTEMBER, 1907

(Courtesy of C. S. NICHOLSON, *Secretary Manila Chamber of Commerce.)*

Arrivals of hemp at Manila up 31st August		495,069 *Bales.*
Arrivals of hemp at Cebu up 31st August		131,228 *Bales.*
Arrivals of hemp at all Ports up 31st August		626,297 *Bales.*
Stocks on hand in Manila, Cebu on 1st January		63,432 *Bales.*
TOTAL		689,729 *Bales.*
Export to all parts to date 31-8-07	587,745 *Bales.*	
Local consumption estimated at	6,079 "	593,824 *Bales.*
Total stocks at Manila, Cebu on 1st September, 1907		95,905 *Bales.*

EXPORT OF HEMP, AUGUST, 1907.

Date	*Vessel*	*London*	*L'pool*	*Atlantic U. S.*	*Pacific East & California*	*Australia*	*Other pts.*	*Total Bales*
	F'wd:—	174,303	58.707	205,103	17,700	7,285	44,534	507,632
Aug. 2	Rubi	800	835				100	1,735
" "	Yuensang	2,033	750				450	3,233
" 3	C. Ferd. Laeisz						375	375
" "	Seneca.....Cebu			12,055				12,055
" 5	Alicante	850					115	965
" "	Shawmut				10,000			10,000
" 6	Taming						350	350
" 8	Chingtu					250		250
" 9	Tsinan						12	12
" "	Zafiro						400	400
" 10	Dray Castle			8,786				8,786
" "	Sungkiang.....Cebu		275				50	325
" 12	Nikko Maru					900		900
" 13	Tean		550					550
" 16	Rubi	1,026					450	1,476
" 17	America Maru				750			750
" "	Yuensang	50	1,750					1,800
" 18	Yunnan	6,305					1,000	7,305
" 19	Prinz Sigismund						217	217
" 23	Zafiro						550	550
" 24	Loongsang	300					737	1,037
" "	Dray Castle.....Cebu			8,186				8,186
" "	Polyphemus.....do..	4,821	940				375	6,136
" "	Kaifong .....do..		1,050					1,050
" "	Ambria .....do..						500	500
" 28	Pathan			9 8				9,886
" 30	Yawata Maru						73	73
" "	Rubi	911					100	1,011
" 31	Indrawadi						200	200
	TOTAL	191,399	64,857	244,016	28,450	8,435	50,588	587,745

FAR EASTERN STOCKS AND QUOTATIONS

Courtesy of Messrs. Kadoorie & Co., Hongkong, for September, 1907.

STOCK.	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	WORKING ACCOUNT	DATE	LAST DIVIDEND.	Approximate Yield per cent. per annum at Present Quotation.*	CLOSING QUOTATIONS.
BANKS.											
Hongkong & Shanghai Banking Corporation	1865	$15,000,000	80,000	$125	$125	*g* £1,000,000	$1,797,169	30-6-07	£1.15[- for half year ending $30.6.07 @ ex 2[2 2/8=$16 04 per share	4 1/4	$647½ sa. ex n. issue $505 n i. £78 ex n. issue £60-10[- new issue (first call)
do do (new)	1907		40,000	$125	$62½	*s* $11,750,000 *i* $250,000					
National Bank of China, Ld.	1891	£699,475	10) 99,925	£7	£6	*c* £12,735 $300,000	$71,293	31-12-06	$2 (London 3[6) for 1903	....	$51
Russo Chinese Bank		Rbs. 15,000,000 Tls. 2,000,000	80,000 16,000	Rbs. 187½ Tls. 125	Rbs. 187½ Tls. 125	*g* Rbs7,130,500 *s* Rbs2.000,000 *s* Tls 800,000			9 per cent		Tls. 175
MARINE INSURANCES.											
Canton Insurance Office, Ld.	1881	$2,500,000	10,000	$250	$50	$1,675,000 *j* $200,000	$233,638	31-12-05	$20 for 1905	7¼	$270
North China Insurance Co., Ld.	1863	£150,000	10,000	£15	£5	*g* £110,000 *s* Tls. 100,000 *f* Tls. 50,000	Tls. 185,529	30-6-06	Interim of 7s. 6d. for account 1906 at ex. 2-10-11-16 per tael	6	Tls. 77½ sellers
Union Ins. Society of Canton, Ld.	1867	$3,100,000	12,400	$250	$100	*s* $3,000,000 *g* £70,000 *f* $456,407 *j* £125,137.15 *u* $817,628	$1,460,490	31-12-06	Final of $12 making $42 for 1905, and interim of $30 for account 1906	5½	$760 sa. and b.
Yangtsze Ins. Association, Ld.	1862	$800,000	8,000	$100	$60	$850,000 *j* $136,287 *f* $ 15,527	$461,476	31-12-06	$12 for year ending 31. 12. 05	6¾	$170
FIRE INSURANCES.											
China Fire Ins. Co., Ld.	1870	$2,000,000	20,000	$100	$20	$1,000,000 *x* $320,449 *f* $7,616	$362,980	31-12-06	$6 and bonus $2 for 1905	9½	$87 sales
Hongkong Fire Ins. Co., Ld.	1868	$2,000,000	8,000	$250	$50	$1,256,483	$435,236	31-12-06	$40 for 1905	12¼	$315
SHIPPING.											
China & Manila Steamship Co., Ld	1882	$750,000	1) 30,000	$25	$25	$7,000	$365	31-12-06	$1 for 1906	6¾	$15 buyers
Douglas Steamship Co., Ld.	1883	$1,000,000	20,000	$50	$50	$264,638 *i* $93,562	Nil.	30-6-06	$2½ for year ended 30-6-06	6	$41
Hongkong, Canton & Macao Steamboat Co., Ld.	1865	$1,200,000	80,000	$15	$15	*e* $250,000 *d. i.* $600,000 *f* $144,386	$27,101	30-6-07	$1 for 1st half year ending 30-6-1907	7¼	$28
Indo-China Steam Navigation Co., Ld. (Preferred)	1882	*m* £600,000	2) 60,000	£5	£5	£60,000 *i* £270,958	£3,694	31-12-06	5[- @ ex. 2-2¾=$2.24 per share for 1906	3½	$39 bnyers $28 buyers
Do. Do. (Deferred)											
Shanghai Tug & Lighter Co., Ld.	1903	Tls. 1,500,000	20,000	Tls. 50	Tls. 50	Tls. 54,372	Tls. 13,327	31-12-06	Interim of Tls 1¾ for a[c 1907	11½	Tls. 47½
Do. Preference			10,000							10½	Tls. 48 buyers
"Shell" Transport & Trading Co., Ld.	1898	£ 2,000,000	2,000,000	£1	£1	£400,000 *i* £5 167.14-1	£85,355-6-10	31-12-05	1[-(Coupon No. 8) for 1907	4½	45[-buyers
"Star" Ferry Co., Ld.	1898	$200,000	10,000	$10	$10	$65,000	$137	30-4-07	$1.00 50 cts. for year ended 30-4-07	5	$20
	1900		10,000	$10	$5	*i* $32,957				4	$12
Taku Tug & Lighter Co., Ld.	....	Tls. 1,500,000	12) 30,000	Tls. 50	Tls. 50	Tls. 98,000 *d* Tls. 419,479 *e* Tls. 62,000 *i* Tls. 81,200 *q* Tls. 30,000	Tls. 18,730	31-12-06	Final of Tls. 2 making Tls. 6 for 1906	12	Tls. 50 sellers
REFINERIES.											
China Sugar Refining Co., Ld.	1878	$2,000,000	20,000	$100	$100	*o* $345,741 *e* $450,000 *r* $ 56,848	$9,218	31-12-06	$8 for year ending 31-12-06	8¼	$98 sales
Luzon Sugar Refining Co., Ld.	1882	$700,000	7,000	$100	$100	none	*Dr.* $138,523	31-12-06	$3 for 1897	....	$21
Perak Sugar Cultivation Co., Ld.	....	Tls. 350,000	7,000	Tls. 50	Tls. 50	Tls. 100,000	Tls. 8,935	31-8-06	Tls. 4. (8%) for year ending 31-8-06	4½	Tls. 90 sellers
MINING.											
Chinese Engineering & Mining Co., Ld.	1901	£1,000,000	1,000,000	£1	£1	*d* £110,000 *h* £12,289	£12,546	28-2-06	Interim of 1[6 for account year ending 28-2-07	4	Tls. 15.20 buyers
Raub Australian Gold Mining Co., Ld	1892	£200,000	150,000	£1	18-10	£4,873	*Dr.* £15,481	31-3-06	No. 12 of 1[-=48 cents	....	$7 buyers
			50,000	£1	£1						
DOCKS, WHARVES AND GODOWNS.											
Fenwick (Geo.), & Co., Ld.	1889	$450,000	*z* 18,000	$25	$25	$64,124	$10,335	31-12-06	$1¾ for year ending 31-12-06	10¼	$17
Hongkong & Kowloon Wharf & Godown Co., Ld.	1886	$2,000,000	40,000	$50	$50	$550,000 *t* $23,152 *z* $30,000	$3,047	31-12-06	Interim of $2 for six months ending June 30th 1907	6½	$65
Hongkong & Whampoa Dock Co., Ld.	1866	$2,500,000	50,000	$50	$50	*v* $50,000 $56,299	$491,580	30-6-07	$4 for half year ending June 30th 1907	7¾	$105
Shanghai Dock & Engin'g Co., Ld.	1906	Tls. 5,570,000	13) 55,700	Tls. 100	Tls. 100	Tls. 1,000,000	Tls. 10,459	30-4-07	Tls. 3 for year ending 30th 1907	3¾	Tls. 79
Shanghai & Hongkew Wharf Co., Ld.	1902	Tls. 3,600,000	14) 36,000	Tls. 100	Tls .100	*b* Tls. 487,210 *r* Tls. 100,000 *p* Tls. 190,100 *e* Tls. 75,000	Tls. 23,117	31-12-06	Interim of Tls. 8 for a[c 1907	8	Tls. 226 buyers
LANDS, HOTELS AND BUILDINGS											
Anglo-French Land Investment Co., Ld.	1906	Tls. 2,500,000	3) 25,000	Tls. 100	Tls. 100	Tls. 15,000	Tls. 3,388	28-2-07	Tls. 6 for 14½ months ending 28-2-07	6	Tls. 103
Astor House Hotel Co., Ld.	1901	$750,000	4) 30,000	$25	$25	$30,000	$10,908	30-6-07	$2½ for year ending 30-6-07	9¾	$23
Astor House Hotel, Ld. (Tientsin)	....	Tls. 100,000	2,000	Tls. 50	Tls. 50	Tls. 35,000 *e* Tls. 10,000	Tls. 1,013	28-2-06	Final of Tls. 6½ making Tls. 11½ for year ending 28-2-06.	8½	Tls. 140 buyer
Central Stores, Ld.	....	$751,845	16) 50,123	$15	$15	*n.* $1 000	$9.178	31-12-06	$1.80 for 1906	12	$14½
Hongkong Hotel Co., Ld.	1866	$600.000	12 000	$50	$50	$648,975 *r* $26,075	$371	31-12-06	$5 for 2nd half-year making $10 for 1906	10	$100 buyers
Hongkong Land Investment & Agency Co., Ld.	1889	$5,000,000	50,000	$100	$100	*e* $250,000	$56,218	31-12-06	Interim of $3½ for half year ending 30-6-07	7¼	$98 sellers
Humphrey's Estate & Finance Co., Ld.	1887	$1,500,000	150,000	$10	$10	*i* $208,386 *e* $50,000	$11,567	31-12-06	80 cents for 1906	7¾	$10½

FAR EASTERN STOCKS AND QUOTATIONS—(CONTINUED.)

STOCKS	WHEN ESTABLISHED	CAPITAL	NO. OF SHARES	VALUE	PAID UP	RESERVE	WORKING ACCOUNT	DATE	LAST DIVIDEND	Approximate Yield per cent. per annum at Present Quotation.*	CLOSING QUOTATIONS
Kowloon Land & Bldg. Co., Ld.	1889	$300,000	6,000	$50	$30	none	$1089	31-12-06	$2½ for 1906	7	$36
Shanghai Land Investment Co., Ld.	1888	Tls. 3 900,000	78.000	Tls. 50	Tls. 50	Tls 869,493 / *e* Tls. 170,000	Tls. 61,978	31-12-06	Interim div. of Tls. 3 per share for % 1907	7½	Tls. 102 sellers
Tientsin Land Investment Co., Ld.	1902	Tls. 772,600	7,726	Tls. 100	Tls. 100	*i* Tls. 71,685	Tls. 1,973	31-12-06	Final of Tls. 5 making Tls. 8 for 1906	---	Tls. 100 buyers
West Point Bldg. Co., Ld.	1889	$625,000	12,500	$50	$50	none	$1,519	31-12-06	Interim of $2 for six months June 30th 1907	8½	$48
COTTON MILLS.											
Ewo Cotton Spinning & Weaving Co., Ld.	1895	Tls. 1,000,000	5) 20,000	Tls. 50	Tls. 50	Tls. 150,000 / Tls. 45,939	Tls. 64,986	31-10-06	Tls. 10 for year ended 31-10-06	15½	Tls. 65 buyers
Hongkong Cotton Spinning, Weaving & Dyeing Co., Ld.	1901	$1,250,000	125,000	$10	$10	*e* $110,000	$21,660	31-7-06	$1¼ for year ended 31-7-06	11½	$11
International Cotton Manufacturing Co., Ld.	1895	Tls. 750,000	6) 10,000	Tls. 75	Tls. 75	Tls. 150,000	Tls. 36,211	30-9-06	Tls. 6 for year end. 30-9-06 (8%)	11½	Tls. 52 buyers
Laou-kung-mow Cotton Spinning & Weaving Co., Ld.	1895	Tls. 800,000	7) 8,000	Tls. 100	Tls. 100	none	Tls. 31,469	31-12-06	Tls. 8 for 1906	8¾	Tls. 9
Soy Chee Cotton Spinning Co., Ld.	1895	Tls. 1,000,000	2,000	Tls. 500	Tls. 500	*l* Tls. 28,257	Tls. 50,663	31-12-06	Tls. 50 for 1906	16½	Tls. 300
MISCELLANEOUS.											
Bell's Asbestos Eastern Agency, Ld.	1895	£5,377.10s	11) 8,604	12-6	12-6	£814	£856	31-12-05	1s. 3d. for 1906	9	$ 6½
Campbell, Moore & Co., Ld.	1886	$12,000	1,200	$10	$10	$9,000	$653	31-12-06	$3 for 1905	---	$20 sellers
China-Borneo Co., Ld.	1903	$720,000	8) 60,000	$12	$12	none	Nil.	31-12-06	$1 for 1904	---	$9.25 sales
China Flour Mill Co., Ld.	---	Tls. 200,000	4,000	Tls. 50	Tls. 50	Tls. 50,000	Tls. 889	31-12-05	Final of Tls. 5 making Tls. 10 for 1905	---	Tls. 60
China Light & Power Co., Ld.	1901	$550,000	50,000	$10	$10	none	$25,000	28-2-07	60 cents for year ending 28-2-06	---	$6 sales & buyers
Do. do. Special Shares	1907		17) 50,000	$1	$1						
China Provident Loan & Mortgage Co., Ld.	1898	*a* $1,000,000	100,000	$10	$10	$115,000	$855	31-12-06	80 cents for 1906	9	$9
Dairy Farm Co., Ld.	1896	$187,500	25,000	$7½	$6	$50,000	$2,555	31-7-06	$1.30 for year ending 31-7-06	8¼	$16 buyers
Green Island Cement Co., Ld.	1889	$2,000,000	200,000	$10	$10	$411,000	$10,804	31-12-06	Interim div. of 50 cents per share for % 1907	9	$11 sellers
Hall & Holtz, Ld.	....	$420 000	21,000	$20	$20	*p* $500,000 / $186,000	$15,002	28-2-07	$2½ for year ending 28-2-07	11¼	$20 sellers
Hongkong Electric Co., Ld.	1889	$600,000	60,000	$10	$10	none	$2,953	28-2-07	$1.00 for year ending 28-2-07	7¾	$14 sales
Peak Tramways Co., Ld.	1907	$750,000	25,000	$10	$10	none	$2,655	30-4-07	$1 per share for period from 19th Oct. to 30th April, 1907	8½	$12.70 sales
Do. (New)			50,000	$10	$10						
Hongkong Ice Co., Ld.	1881	$125,000	5,000	$25	25	*k* $105,000	$4,361	31-12-06	Interim of $4 for ½ year ending June 30th 1907	9½	$240
Hongkong Rope Manufacturing Co., Ld.	1883	$500,000	50,000	--- $10	10	$65,000	$4,212	31-12-06	Interim of 80 cents per share for % 1907	8	$25 buyers.
Maatschappij tot Mijn-, Bosch- en Landbouwexploitatie in Langkat	1902	Gs. 2,500,000	25,000	Glds. 100	Glds. 100	Tls. 547,500 / *i* Tls. 27,603	Tls. 10,374	31-10-05	Second interim div of Tls. 7½ making Tls. 15 for account 1907	9½	Tls. 325 buyers
Philippine Co., Ld.	1904	$675,000	67,500	$10	$10	none	*Dr.* P. 34,324	31-12-05	None	---	$5 buyers
Shanghai Gas Co., Ld.	1903	Tls. 800,000	24,000	Tls. 50	Tls. 50	*d* Tls. 100,000	Tls. 7,990	31-12 06	Final of Tls. 3½ and bonus of Tls. 1½ for year ending	7¾	Tls. 108½
Shanghai Horse Bazaar Co., Ld.	1904	Tls. 270,000	5,400	Tls. 50	Tls. 50	Tls. 67,323	Tls. 9,751	31-12-05	Tls. 4 for 1905	---	Tls. 30 buyers
Shanghai Pulp & Paper Co., Ld.	....	Tls. 450,000	4,500	Tls. 100	Tls. 100	Tls. 45,000 / *e* Tls. 8,000	Tls. 3,354	31-12-06	Final of Tls. 5 making Tls. 10 for 1906	14	Tls. 70 sellers
Shanghai-Sumatra Tobacco Co., Ld.	1902	Tls. 600,000	9) 30,000	Tls. 20	Tls. 20	Tls. 24,820 / *w* Tls. 50,000	Tls. 7,843	31-10-06	Final of Tls. 6 making Tls. 10 for 1906	8½	Tls. 121 buyers
Shanghai Waterworks Co., Ld.	1881	£288,000	8,175 / 7,200	£20	£20 / £15	Tls. 190,000	Tls. 85,592	31-12-05	Interim of 15/- for % 1907 / Interim of 11/-3 for % 1907	---	Tls. 310 buyers
South China Morning Post, Ld.	1903	$150,000	6,000	$25	$25	none	*Dr.* $41,934	28-2-06	None	---	Tls. 280
Steam Laundry Co., Ld.	1902	$100,000	20,000	$5	$5	none	214	31-5-06	30 cents (old) and 15 cents (new) for year ended 31-5-06	---	$22
Tientsin Waterworks Co., Ld.	1901	Tls. 200,000	2,000	Tls. 100	Tls. 100	Tls. 15,259 / *e* Tls. 4,000	Tls. 201	30-4-07	Tls. 6½ for year ending 30-4-07	4¼	$6½
Union Waterboat Co., Ltd.	1905	$500.000	16) 50,000	$10	$10	none	$349	31-12-06	First year	---	Tls. 97
United Asbestos Oriental Agency, Ld.	1896	$100,000	10,000	$10	$4	$25,000	$752	31-5-06	80 cts. on 9,900 ord. shares & $19 on 100 Founder shares for year ending 31-5-07	6½	$10
Watson (A. S.) & Co., Ld.	1886	$900,000	90,000	$10	$10	$300,000 / $25,000	$5,482	31-12-06	Final of 40 cts. making 80 cts. per share for year ending 31-12-06	7¼	$11 sellers
William Powell, Ld.	1901	$150,000	15,000	$10	$10	*e* $4,500	$182	30-6-06	Final of 30 cents making 80 cents for year ending June 30th 1906	10	$8

LOANS AND DEBENTURES.	AGENTS FOR THE LOAN.	AMOUNT OF LOAN.	PAR VALUE	OUTSTANDING BONDS.	WHEN PAYABLE.	CLOSING QUOTATIONS.
China Government, 7 per cent. Silver Loan 1886 E	Hongkong & Shanghai Banking Corporation.	Tls. 767,200	Tls. 250	1914	Mar. 31st and Sept. 30th each year until Mar. 31st, 1917	par. Plus accrued interest
Hongkong Hotel Company, Ltd., 6 per cent. Mortgage Debentures of 1899 ‡		$500,000	$500	§ all	Half yearly, June 30th and December 31st	par.
Shanghai & Hongkew Wharf Company, Ltd., 6 per cent. Debentures of 1902		Tls. 543,900	Tls. 100	.....	Half yearly, June 30th and December 31st	Tls. 99
Astor House Hotel Company, Ltd., 8 per cent. Debentures of 1903		Tls. 500,000	Tls. 100	...	Half yearly, January 1st and July 1st	Tls. 105
Chinese Engineering & Mining Co., Ltd., 6 per cent. Debentures of 1903 †	.....	£500,000	¶	£431.960	Half yearly, June 30th and December 31st	par.
International Cotton Manufacturing Co., Ltd. 7% Debentures of 1901	Russo Chinese Bank	Tls. 500,000	Tls. 100	||	Half yearly, March 31st and Sept. 30th	Tls. 97½.
China Light and Power Co., Ltd. 6% Debentures of 1907	.....	$500,000	$100	.....	Half yearly, Jnne 30th and December 31st.	par.

a Authorized capital $2,000,000.
b Building Reserve Account.
c Capital Reserve Fund.
d Depreciation Fund.
e Equalization of Dividend Fund.
f Exchange and Investment Fluctuation Account.
g Gold Reserve Fund
h Exchange Reserve Account.
i Insurance Fund.
j Reinsurance Fund.
k Contingencies Account.
l Legal Reserve Fund.
m Authorized Capital
n Sinking Fund.
o Raw Sugar Reserve Account.
p Premium on New Issue.
q Boiler Repairs and Renewals Account
r Repairs and Renewals Account.
s Silver Reserve Fund.
t Depreciation and Repairs Account
u Underwriting Suspense Account.
v Special account
w Special Works Fund.
x Extra Reserve Fund.
y 72,560 owned by the Company.
z 7,200 shares unissued.
1 5,725 shares unissued.
2 First issue of 60,000 of which 10,411 unalloted.
3 5,000 shares unissued.
4 4,480 shares unissued.
5 5,000 shares unalloted.
6 1,616 shares unalloted.
7 842 shares unissued.
8 14,000 shares unissued.
9 17,000 shares unissued.
10 0,453 shares actually issued.
11 7,688 shares actually issued.
12 4,200 shares unissued.
13 500 shares unissued.
14 198 shares unissued.
15 22,250 shares unissued.
16 10,000 shares unissued.
17 Special shares are entitled to half of the profits.
18 Capital contributed by Chinese Government-Kuping Tls. 5,000,000.
* Based on last year's dividend.
** Based on present dividend.
|| Only Tls. 134,000 taken up.
§ 216 held by the Company.
¶ In certificates of £20 and £100.
‡ Redeemable in 10 years, or at option of Company, the Company giving 6 months notice.
† Redeemable at par at rate of £10,000 per annum from 31st December 1903 to 31st December 1952.
Dr Deficit.

SINGAPORE SHARE QUOTATIONS

(COURTESY MESSRS. FRASER & CO., BROKERS, SINGAPORE, AUGUST 31, 1907)

Date of Formation	Capital	Capital paid up	No of Shares Issued	Issue Value	Paid up	Reserve	Last Dividend	Name	Buyers	Sellers	Closing Quotations
								MINING			
1903	$300,000	300,000	30,000	10	10	.....	25% for year ending 31-3-09	Belat Tin Mining Co., Ltd	11.25	11.50	$11.25
1907	$300,000	225,000	22,500f*	10	10	.....		Bruang Ltd	....	8.50	8.50
1903	£400,000	350,000	350,000a	1	1	.....		Duff Development Co., Ltd	1.60	1.7	1.70
1901	$600,000	600,000	60,000	10	10	.....	20% for year ending 30-4-07	Bruseh Hydraulic Tin Mining Co., Ltd	....	14.00	14.00
1905	£30,000	30,000	30,000	1	1	.....	3f- during 1906	Jeher Hydraulic Tin Mine, Ltd	....	10.00	10.00
1907	$400,000	$375,000	37,500b	10	10	.....		Kanaboi, Ltd	8.75	9.75	9.75
1901	£60,000	60,000	60,000	£1	£1	.....	1f interim for 1907	Kinta Tin Mines, Ltd	13.00	13.25	13.25
1906	£100,000	£90,000	90,000c	£1	£1	.....		Kledang Tin Mining Co., Ltd	14.00	14.25	14.00
1905	$150,000	99,000	9,900d	10	10	6,000	25% for 1907	Kuantan Tin Mining Co., Ltd	15.25	15.75	15.50
1906	£120,000	£120,000	120,000	1	1	.....		Lahat Mines Ltd	....	8.75	8.75
1906	£30,000	£30,000	30,000	£1	£1	.....		Malaya and Siam Corporation, Ltd	....	....	£1 12s. 6d.
1906	$450,000	$337,500	45,000	10	7.50	.....		Malacca Tin Dredging Co., Ltd	....	6.50	6.50
1906	£250,000	£145,000	600,000j	5f-	2f6	.....		Pahang Consolidated Co., Ltd	23j	23f6	23f6 prem.
			100,000	£1	£1	.....		" " " 7% Pref	....	....	nominal.
1904	£120,000	100,000	100,000e	1	1	.....	4f6 interim for 1907	Pusing Lama Tin Mines, Ltd	20.05	20.50	20.50
1905	£27,000	21,750	21,750f	1	1	.....	1j- interim during 1907	Rambutan, Ltd	....	21.25	21.25
1992	£200,000	191,250	50,000	1	1	4,873	1f- paid January 1901	Raub Aust Gold Ming Co., Ltd, *Fully. pd.*	5.50	5.75	5.75
			150,000	1	18f10	.....	1f- " " "				
1805	£40,000	35,200	35,200g	1	1	.....		Redhills Tin Mining Co., Ltd	5.50	5.75	5.75
1998	f.2.000,000	1,800,000	18,000	100	100	.....	52½% for year ending 31-12-06	Redjang Lebong Mining Co	....	15.00	15.00
1800	$110,000	110,000	22,000	5	5	.....	10% for 1907	Royal Johore Tin Mining Co., Ltd	....	....	625.00
1907	£80,000	£60,000	40,000	1	1	.....		Sempam Tin Mines, Ltd	2.00	2.50	2.25
			40,000	1	10f-	.....		" " "	....	7.75	7.75
1906	$850,000	850,000	85,000	10	10	.....	20% interim for 1907	Serendah Hydraulic Tin Ming. Co., Ltd	14.50	14.75	14.50
1899	$230,000	230,000	23,000	10	10	.....	5% for ½ year ending 30-6-06	Sipiau Tin Co., Ltd	....	6.00	6.00
1907	£90,000	70,000	70,000g*	£1	£1	.....		Tekka, Limited	12.25	12.50	12.50
1902	£160,000	149,185	149,185h	1	1	.....	4f- interim for 1907	Tronoh Mines, Ltd	....	21.75	21.75
								RUBBER			
			46,500i	1	1	.....	18% for year ending 31-12-06	Anglo-Malay Rub. Co., Ltd. *Fully paid*	£4.17s. 6d.	£5.0.0.	£4 17 6
1905	£150,000	104.937 10/-						" " " *Contributory*	....	4.10.0	4. 7. 6
			93,500	1	12f6	.....		Balgownie Rub. Estate Ltd. *Fully paid*	$24.00	....	$24.00
1905	$200,000	105,000	10,500	10	10	.....	12½% interim 07	Batu Caves Rub. Co., Ltd. *Fully paid*	....	4.17.6	4. 17. 6
1904	£30,000	11,125	7,000k	1	1	.....		" " " *Contributory*	....	....	4. 5. 0
			11,000	1	7f6	.....		Bukit Rajah Rubber Co., Ltd	....	6.12.6	6. 1. 0
1903	£70,000	61,000	61,000l	1	1	.....	30% for year ending 31-3-07	Castlewood Rubber Co., Ltd	10.00	10.25	10.25
1906	$150,000	125,000	12,500m	10	10	.....		Cicely Rubber Estates Co., Ltd	....	5.0.0	4. 17. 6
1904	£12,000	10,500	6,000	1	1	.....	15% to 31-3-07	" " " " 5% Pref	....	....	3. 5. 0
			6,000	1	15f-	.....	20% to 31-3-07	Consolidated Malay Rub. Estates, Ltd	3.2.6	....	3 5. 0.
1905	£75,000	55,000	55,000o	1	1	.....	10% for year ending 31-12-06	Highlands & Lowds. Para Rub. Co., Ltd.			
1906	£310,000	227,783 15/-	181,454p	1	1	.....	11% or year ending 31-12-07	*Fully paid*	....	....	3 10. 0.
			123,546	1	7f6	.....		" " " " *Contributory*	....	....	1 17. 6.
1906	£180,000	£180,000	18,000	1	1	.....		Kuala Lumpur Rubber Co., Ltd	1.5.0	1.9.0	1 5. 0.
			80	f.250	250	.....		Langen Rub. and Cocoanut Co., Ltd	....	....	f.250.
1906	f.1 75,000	f.117,500	460	f.250	125	.....		" " " " " "	....	....	f.125.
			160	f.250	250	.....		" " " " " " *Deferred*	....	....	f.250.
1906	$250,000	225,000	22,500q	10	10	.....		Ledbury Rubber Co., Ltd	14.00	....	$14.00
			10,060	1	1	.....		Linggi Plantations Ltd., 7% *Pref*	....	....	
			9,866	1	1	.....		" " " *Ordinary*	£5.17.6	....	£5 17. 6d.
1895	£50,000	32,332 10/-	10,000	1	1	.....	15% for 1906		....	....	
			10,000	1	5f-	.....			....	....	£3 0s. 0d.
			115,000	1	1	.....	7½% for year ending 31-12-06	Malacca Rubber Plantations 7½% *Pref*	1.1.10	1.2.0	1 1. 0.
1906	£300,000	260,625	140,000	1	1	.....		" " Ordinary *Fully paid*	....	17/-	17/-
			45,000	1	2f6	.....		" " *Contributory*	....	....	nominal.
1903	£30,000	20,000	20,000r	1	1	.....	40% for 1906	Pataling Rubber Estates Synd. Ltd	....	....	8. 5. 0.
1906	$250,000	225,000	22,500i*	10	10	.....		Ragalla Rubber Co., Ltd	9.75	10.00	10.00
1904	£20,000	8,794	2,588h*	1	1	.....		Sagga Company Limited	2.0.0	....	2. 0. 0.
			12,412	1	10/-	.....		" " "	....	....	
1904	$100.000	85,000	850s	100	100	.....	20% for year ending 31-1-07	Sandycroft Rubber Co., Ltd	310.00	320.00	$310.00
1898	£30,000	26,762 10/-	26,300	1	1	.....	40% for 1906	Selangor Rubber Co., Ltd	18/6	19/6	19/-
			3,700	1	2/6	.....		" "	....	....	
1903	$250,000	208.000	1,300t	100	100	.....		Sing. & Johore Rub. Co., Ltd. *Fully paid*	195.00	....	195.00
			1,200	100	65	.....		" " " *Contributory*	160.00	....	160.00
1905	$100,000	100,000	10,000	10	10	.....		Sione Rubber Co., Ltd	14.50	....	14.50
1906	£100,000	93,375	73,500	£1	£1	.....		Sungei Kapar Rubber Co., Ltd	....	....	nominal.
			26,500	£1	£5/	.....			£2.1.0	....	£2 1s. 0d.
1904	£50,000	24,420	6,920v	1	1	.....		Sungei Way (Selangor) Rub. Co. Ltd	1.17.6	....	1 17. 6.
			35,000	1	10/-	.....		" " " *Contributory*	1.10.0	....	1. 10. 0
1904	£60,000	50,000	50,000w	1	1	.....	55% for 1906	Vallambrosa Rubber Co., Ltd	....	9.0.0	8 15. 0.
								GENERAL			
1894	£5,377,10.0	£4,648.15/-	7,688	12/6	12/6	£814,11.9	10% dividend for 1905	Bells Asbestos Eastern Agency, Ltd	....	....	7.00
1898	$225,000	225,000	4,500	50	50	112,500	15% & 2½% bon. for yr. end. 31-12-06.	Fraser & Neave, Ltd	147.50	150.00	147.50
						10,000,000a*					
1865	$10,000,000	10,000,000	80,000	125	125	11,000,000b*	£1 15s. & bonus of £1 at ex. 2s.	Hongkong & Shanghai Bankg Corptn	....	....	670.00 ex
						250,000c*	3⅛d. making $40.80 for 1906				new issue
1905	$2,400,000	2,400,000	18,000	100	....	40,000	7½% for year ending 31-10-06	Howarth Erskine, Ltd	155.00	170.00	155.00
			6,000	100	....	.....	7% for year ending 31-10-06	" " 7% *Pref*	120.00	....	120.00
1896	$1,000,000	1,000,000	6,000	100	100	600,000	10% for year ending 31-12-06	Katz Brothers, Ltd. *Deferred*	....	....	135.00
			4,000	100	100	.....	8% " " " " "	" " 8% *Cum. Pref*	....	....	nominal.
1901	$34,000	34,000	3,400	10	10	.....	20% for year ending 31-10-06	Maynard & Co., Ltd	....	....	21.00
1899	$875,000	875,000	6.000	100	100	150,000	5% for year 1906	Riley, Hargreaves & Co., Ltd	....	130.00	130.00
			2,750	100	100	.....	7% for year 1906	" " " " 7% *Pref.*	119.00	112.50	112.50
1903	$600,000	240,000	24,000x	10	10	.....		Singapore Cold Storage Co., Ltd	....	7.00	7.00
1891	$30,000	30,000	600	50	50	20,000	10% for year ending 31-7-06	Singapore Dispensary Ltd	....	55.00	55.00
1884	$200,000	200,000	2,000	100	100	35,000	20% for year ending 31-12-05	Straits Ice Co., Ltd	....	140.00	140.00
1890	$500,000	500,000	5,000	100	100	400,000	5% interim during 1907	Straits Steam Ship Co., Ltd	195.00	....	195.00
						241 075d*					
1904	$40,000	$30,280	2,535y	10	8	.....		Straits Tobacco Factory, Ltd	....	6.00	6.00
			1,000	10	10	.....		" " " "	....	....	nominal.
1887	$3,000,000	2,500,000	250,000z	10	10	1,050,000	10% & 5% bon. ½ yr. end. 31-3-07	Straits Trading Co., Ltd	56.25	57.00	66.50
						1,037 084e*		**DEBENTURES**			
								Howarth Erskine, Ltd. 6%.....$ 600,000	....	....	3% prem.
								Singapore Municipal 6% 400,000	....	....	20% prem.
								" " 5%.....1,878,000	....	....	3% prem.
								" " 4½%.....1,600,000	....	5%	5% prem.
								" " 4% 602,900	....	....	2% dis. no
								Riley, Hargreaves & Co., Ld. 6%..225,000	....	3%	3% prem.
								Tanjong Pagar. Dock Board 6%....250,000	....	....	3% prem.
								" " " 5%..1,050,000	....	....	par.

a 50,000 unissued
b 2,500 "
c 10,000 "
d 5,100 "
e 22,000 "
f 5,250 "
g 4,800 "
h 10,815 "
i 10,000 "
j 9,500 "
k 12,000 "
l 9,000 "
m 9,000 unissued.
n 2,500 "
o 20,000 "
p 5,000 "
q 2,500 "
r 10,000 "
s 150 "
t 300 "
u 1,645 "
v 8,080 "
w 10,000 "
x 36,000 "
y 465 unissued.
z 50,000 "
a* Special Gold Reserve Fund
b* Silver Reserve Fund.
c* Insurance Fund.
d* Sundry Reserves.
e* Sundry Reserves.
f* 7,500 unissued.
g* 20,000 "
h* 5,000 "
i* 2,500 "

YOKOHAMA SHARE QUOTATIONS

COURTESY A. C. HUTTON POTTS, SHARE AND GENERAL BROKER, YOKOHAMA, AUGUST 1907

STOCKS	CAPITAL.	NO. OF SHARES	ISSUE VALUE	AMOUNT PAID UP	RESERVED FUND	AT WORKING ACCOUNT OR CARRIED FORWARD	DATE	LAST DIVIDEND	FOR TERM	CLOSING QUOTATION
Brett & Co., Ltd.	-Y- 28,000	2800	-Y- 10	-Y- 10			31-12-06	8%	for 1 year	10 Sellers.
Club Hotel, Ltd.	185,000	1850	100	100	3,000	-Y- 943.52	31-3-07	7%	for 1 year	80 Sellers.
Grand Hotel, Ltd.	500,000	5000	100	100		-Y- 23,011.87	30-6-07	6%	for ½ year	150 Sales.
Helm Bros., Ltd.	186,000	3720	50	50	22.500	-Y- 2,916.83	31-12-06	20%	for 1 year	85 Sellers.
Cangfeldt & Co., Ltd.	150,000	1500	100	100		Dr. 20.304.15	31-12-06		for ½ year	45 Sellers.
L. Nickel & Co., Ltd. †	500,000	20000	25	25		1,470.97	31-10-06	16%	for 1 year	41 Nominal.
Yokohama Engine and Iron Works *	500,000	10000	50	50	50,000	-Y- 12,477.04	31-5-07	35%	for 1 year	90 Sellers.
Oriental Hotel, Ltd., Ordinary	250,000	3000	50	50	62,285.42		31-8-06	15%	for 1 year	75 Nominl.
Oriental Hotel, Ltd., Preference		2000	50	50				8%	for 1 year	64 Sales.
The Union Estate and Investment Co., Ltd. ‡	1,000,000	10000	100	100			First Year.			105 Sales.

† 285,000 unissued.

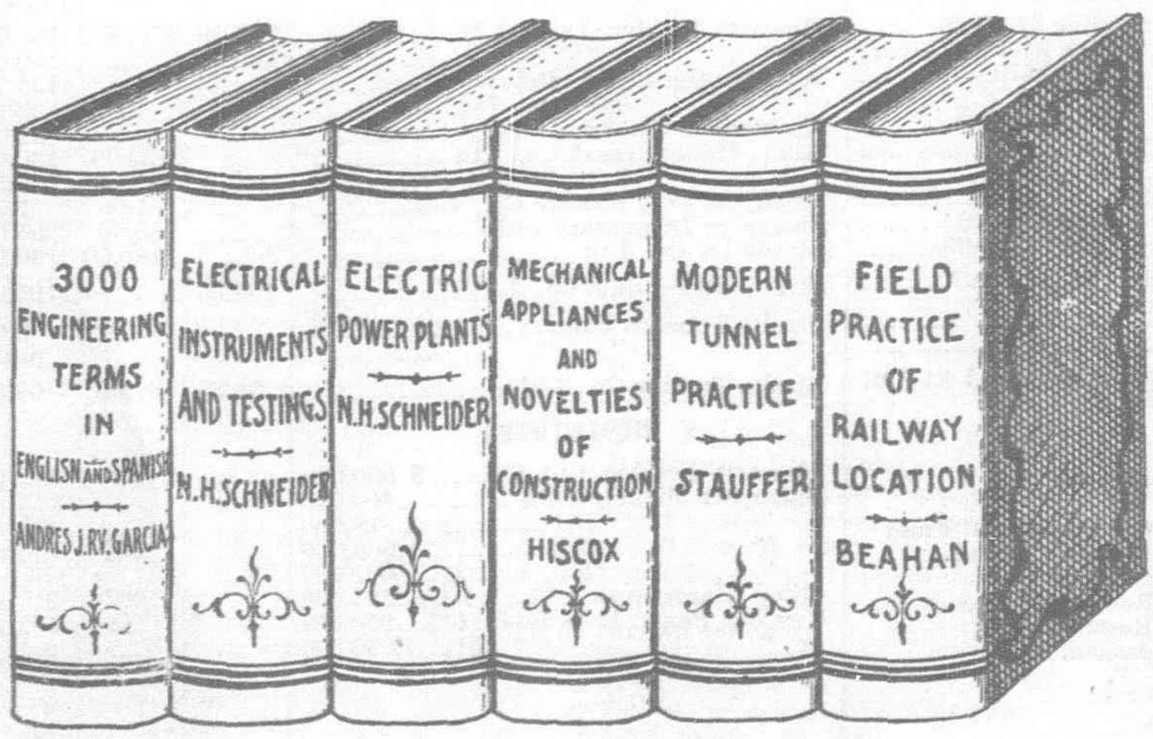
‡ 475,000 unissued.

*-Y- 390,000 issued.

110,000 unissued.

DEBENTURE LOANS	AMOUNT OF LOAN.	FACE VALUE OF DEBENTURES.	RATE OF INTEREST.	INTEREST PAYABLE.	CLOSING QUOTATION.
Brett & Company, Limited	11,500.00	100.00	7%	1 June and 1 Dec.	85 Sales.
Yokohama United Club	250,000.00	100.00	7%	30 June and 31 Dec.	105 Sales.
C Nickel & Company, Limited	50,000.00	100.00	8%	1 May and 1 Nov.	110 Sellers.
Oriental Hotel, Limited	250,000.00	100.00	8%	1 April and 1 Oct.	110 Sellers.
Union Estate and Investment Co., Limited	250,000.00	100.00	6%	30 June and 31 Dec.	100 Sellers.

JAPANESE STOCKS.	FACE VALUE.	AMOUNT PAID UP.	DIVIDEND PER ANNUM.	DIVIDEND PAYABLE.	CLOSING QUOTATION.
Exchequer Bonds 1st issue	-Y-100	-Y-100	5%	June and Dec.	-Y- 95.50
Exchequer Bonds 2nd issue	100	100	5%	March and Sept.	,, 93.50
Exchequer Bonds 3rd issue	100	100	5%	March and Sept.	,, 93.50
Consolidated Bonds (Seiri)	100	100	5%	June and Dec.	,, 87.00
War Bonds (Gunji)	100	100	5%	June and Dec.	, 87.00
Imperial 5% Bonds (Goburi)	100	100	5%	March and Sept.	,, 87.00
Imperial Government 5% Bonds (issued 1906)	100	100	5%	June and Dec.	,, 87.00
Kobe Water Works Bonds	100	100	6%	June and Dec.	,, 98.00
Osaka Harbour Bonds	100	100	6%	June and Dec.	,, 98.00
Osaka City Public Loan Bonds	100	100	6%	June and Dec.	,, 98.00
Yokohama Water Works Bonds	100	100	6%	June and Dec.	,, 101.00
Yokohama City Public Loan Bonds	100	100	6%	March and Sept.	,, 102.00
Sanyo Railway Company Debentures (2nd issue)	100	100	6%	April and Oct.	,, 98.00
Tokyo Stock Exchange Company	50	50	40%	June and Dec.	,, 162.00
Hokkaido Colliery (Tanko) Steamship Company Limited	50	50	15%	July and Jan.	,, 114.30
Hoden Petroleum Company, Limited	50	50	30%	April and Oct.	,, 141.00
Yokohama Electric Tramway Company, Limited	50	50	7%	July and Jan.	,, 49.90
Tokyo Railway Company Limited	50	50	9%	June and Dec.	,, 74.95
Keihin Electric Railway Company, Limited	50	50	13%	June and Dec.	, 100.00
Hokkaido Hemp Weaving Company, Limited	50	50	13%	July and Jan.	,, 61.00
Kanegafuchi Cotton Spinning Company, Limited	50	50	20%	July and Jan.	,, 126.80
Tokyo Cotton Spinning Company, Limited	50	50	20%	July and Jan.	,, 87.00
Fuji Gassed-Yarn Company, Limited	50	50	25%	July and Jan.	,, 121.50
Nisshin Cotton Spinning Company, Limited	50	12½	—	——	,, 14.00
Fuji Paper Mill Company, Limited	50	50	10%	June and Dec.	, 58.00
Yokohama Dock Company, Limited	50	33	15%	June and Dec.	,, 70.00
Tokyo Rope Manufacturing Company, Limited	50	50	20%	June and Dec.	,, 113.00
Nippon Sugar Refinery Co., Ltd. (Tokyo)	50	50	20%	June and Dec.	, 94.75
Dai Nippon Beer Brewery Company, Limited	50	50	15%	July and Jan.	,, 114.50
Tokyo Gas Company, Limited	50	50	15%	July and Jan.	,, 99.80
Kirin Brewery Company, Limited	50	50	—		,, 90.00
Tokyo Electric Light Company Limited	50	50	10%	June and Dec.	,, 70.00
Yokohama Electric Light Company, Limited	50	50	15%	July and Jan.	,, 84.00
Osaka Electric Light Company, Limited	50	50	15%	July and Jan.	, 122.00
Kobe Electric Light Company, Limited	50	50	14%	July and Jan.	,, 82.50

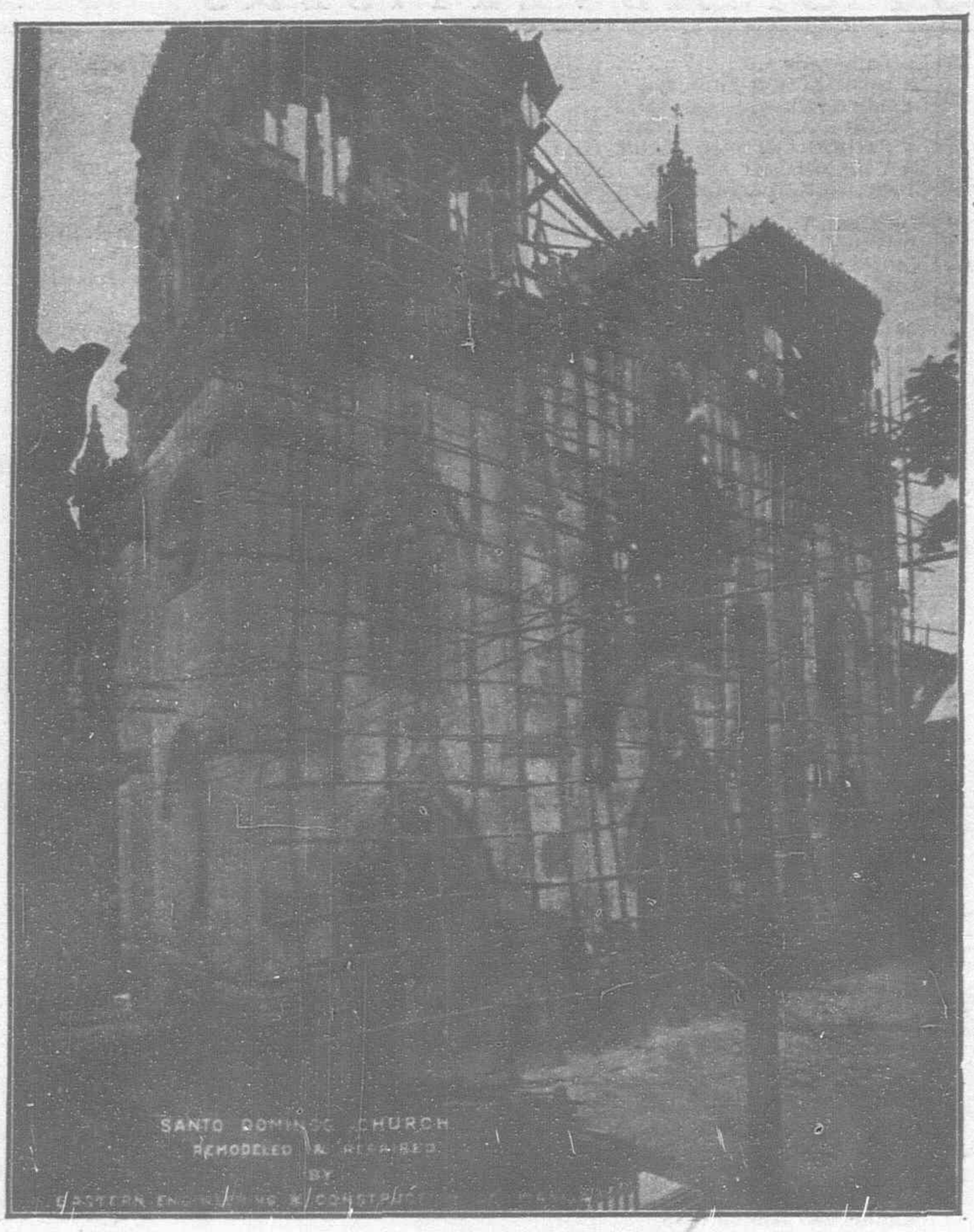


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